ECOLHE

Empower Competences for Onlife Learning in HE

IO1

Digital Technologies in HE: from the European vision to the university governance

Theoretical framework
European framework
Template and tools for national Case Studies

Authors:

Stefania Capogna, Antonio Cocozza, Giulia Cecchini, Maria Chiara De Angelis
Giovanni De Gennaro, Bianca Delli Poggi, Concetta Fonzo, Emanuela Proietti
Organisation: Roma Tre University

Project Scientific Director: Stefania Capogna
Date: 12/07/2021

Erasmus+

ECOLHE - Empower Competences for Onlife Learning in HE | 2020-1-IT02-KA203-079176
Co-funded by the Erasmus+ Programme of the European Union

Index

Introduction 6
1. Theoretical framework 14
Introduction 14
1.1. A universal entitlement of lifelong learning in a changing world of work 15
1.2. The need of a new paradigm for *ONLIFE* 19
1.3. The digital transformation in a theoretical perspective 22
1.4. The online and blended learning in the European Higher Education Area for promoting inclusion, lifelong learning, and innovation 24
1.5. Competences for a culture of lifelong learning, democracy, and work 25
1.6. Key competences for teaching and learning in online and blended environment in HE 31
1.7. Key responsibilities of Academic Bodies to ensure a high quality of online and blended education. 35
1.8. Professional development of teachers in HE 38
1.9. Observing complex organizations. Universities between digital transformation and organizational change 39
1.9.1. The analysis of the organizing activity 42
The context 42
Dimensions of organizing activity 43
The performance criteria 44
The types of objectives 45
1.9.2. A procedural scheme of analysis of the complex organization 45
The structural dimension 45
The cultural dimension of the organization 47
The analysis of organizational roles 47
The role of coordination mechanisms 48
1.10. The ECOLHE research questions 49
References 52
2. Empower Competences for Onlife Learning in HE. The European Framework of Higher Education in the digital era of Covid-19 59
Introduction 59

2.1. Overview on European policies and strategies impacting Higher Education. 59
2.2. What is the European Union doing to boost the European Higher Education Area? 66
2.3. The European Higher Education Area: teaching and learning in the future. 72
2.3.1. Quality 72
2.3.2. Inclusion and gender equality 73
2.3.3. Green and digital transitions 74
2.3.4. Teachers and trainers 74
2.3.5. Higher education 75
2.3.6. Geopolitical dimension 75
2.4. European guidelines and the role of digital skills in relation to competences for life 77
2.5. International frameworks for learners and teachers 80
2.6. DIGCOMP - European Digital Competence Framework 80
2.7. DIGCOMPEDU - Digital Competence of Educators 83
2.7.1. ENTRECOMP - Entrepreneurship Competence Framework 86
2.7.2. iNACOL Blended Learning Teacher Competency Framework 88
2.8. DIGCOMPORG - Digitally Competent Educational Organisations 89
2.9. Teachers professionalization in Europe 93
2.10. Quality in European HE in teaching and learning contexts. 95
Conclusions 100
References 101
Sitography 106
3. Methodological and tools 107
Introduction 107
3.1. The methodological overview 108
3.2. A proposal for index 112
3.2.1. The main sections of the national reports 116
Introduction 116
I PART. Literature analysis: the description of the national framework 117
II PART. Field research: the national case study 117
Conclusions / Results 118
3.3. Focus group: methodological overview 119

3.3.1. Introduction to the focus group method 119
3.3.2. Characteristics of focus groups 119
3.3.3. Focus groups scheduling 120
3.3.4. Recording focus group data 120
3.3.5. Benefits 120
3.3.6. Identify the participants 121
3.4. In-depth interviews with key actors: methodological overview 121
3.4.1. Introduction to the semi-structured interview method 121
3.4.2. Purpose of the tool 122
3.4.3. What is the specific purpose of the interviews? 122
3.4.4. Characteristics of semi-structured interviews are: 122
3.4.5. Conducting the interview 123
3.4.6. Recording semi-structured interviews 123
3.4.7. Benefits 124
3.5. Survey online: methodological overview 124
References 124
Annexe 1 - In-depth interview script 126
Annexe 2 - Focus group script 133
Annexe 3 - Digital Maturity Framework 143
Annexe 4 - Students survey 146

Index of tables

Tab. 1: Objectives for 2025 63
Tab. 2: Areas, Competences, hints, of EntreComp Framework 87
Tab. 3: Thematic elements and sub-elements DigCompOrg 91
Tab. 4: Target involved in the field research 112
Tab. 5: Bologna process key issues and Digital Maturity Framework in HEIs 114

Index of figures

Fig. 1 - Key competences for lifelong learning 26
Fig. 2 - The 20 competences included in the model 27
Fig. 3 - Competences for future works 30
Fig. 4 - The nine educational megatrends and implications for universities 31

Fig. 5 - Recommendations for building global quality in online, open, flexible and technology-enhanced learning 37
Fig. 6 - SWOT for European introduction and quality assurance of online and blended education 38
Fig. 7 - The six dimensions of the European Education Area 76
Fig. 8 – Framework for blended teaching competencies 88
Fig. 9 - DigCompOrg Framework 93

Introduction

Stefania Capogna

Antonio Cocozza

2020 will go down in history as the year of the COVID-19 Pandemic.

It is the year in which, in many continents and countries of the world, we had to change our ways to work, study, socialize and live together.

In project ECOLHE - Empower Competences for On life Learning in Higher Education -, our attention is focused on the ways of studying, particularly in University.

In **Italy**, schools and universities were called "to go online" within a few weeks. Not all schools were ready to do so: some had more difficulties, due to the few previous experiences in integrating ICTs, at system level (Capogna, Cianfriglia, Cocozza 2020). Universities were probably more reactive, but here organizational, technological, and didactic processes linked to the practice of e-learning or blended training were not easy, too. These processes required enormous organizational efforts and forced educational institutions to ask themselves important questions about the use of new technologies in didactic processes. This use should be competent, responsible, effective, and efficient and it required a considerable effort in updating all the staff involved: teachers, senior and junior researchers, administrative staff.

In **Spain**, the pandemic forced educational institutions to adapt to online settings to continue with their activities, adapting content and methodologies to online teaching based on a reflection from an urgent and unprecedented perspective. This situation has implied a transformation of teaching activity (classes, teaching practices and assessment) from face-to-face to an online format. Consequently, this process implied a responsibility of each university institution involving all the agents of the educational community (teachers, students, and administration staff). Therefore, the pandemic situation caused an evident acceleration of the digitization of university institutions, which has been overcome depending on the level of digital maturity of each institution. However, most of them just replicated face-to-to face activities in an online environment by developing synchronous sessions with the students, so it makes evident a need for teachers' training for real digital transformation. UOC, in this sense, contributed with its knowledge with the development of online training activities (webinars) to Spanish HE institutions and the publication of a book facing the most important issues in this process. In addition the Conference of Rectors of Spanish Universities ask both most experienced online

universities in Spain (UNED and UOC) to contribute in the gathering of Open Educational Resources for online teaching oriented to HE institutions.

In **Finland**, digitalisation is at the core of the 'Finland: Vision 2030' initiated in the year 2018-19. Vision 2030 is aiming for more digitalisation of the education system and relevant services. On the one hand, Vision 2030 key goal was online, virtual and remote education. The pandemic situation further brought sudden challenges. However, the Finnish schools and higher education were relatively prepared compared to critical urgent scenarios in many other countries. Many researchers noticed that good ICT infrastructures, teachers' digital competencies and students' abilities to adopt new learning environments play vital roles (Brown, 2002). On the other hand, the preparations were not enough to deal with the sudden demands of a pandemic situation. Finland has excellent ICT infrastructure and high bandwidth internet connections. The biggest advantage noticed students and teachers are equipped with technology usages and willingness to adopt online-distance education. There were minor challenges during the Covid-19 situation but the education department and community working-towards solutions including effective communication.

In **Greece**, universities, schools and other educational facilities were forced to proceed in an online teaching in a very short time. From a technical point of view, in the beginning, the network infrastructure was unable to support the high demand for bandwidth in order to deliver voice and video services to users and, as a result, connections either could not be established or they had very poor performance. These problems were solved in some satisfactory level, but not completely. From an educational point of view, tutors and teachers tried to adjust themselves in a new way of teaching. That was not and still is not easy, as there are no specific guidelines and methods for online learning. Particularly, it is very difficult to interact with students via screen; a teacher among other things should be able to understand how the audience perceives the lecture through student's expressions and reactions. Another issue is the evaluation procedure, as it is almost impossible to supervise an exam properly through a computer screen, without time-consuming procedures. For these reasons, new tools, methods, guidelines and a completely new mentality should be created for tutors, teachers and students, to provide educational services in the best possible way. Universities in Greece were ahead compared to schools, in terms of network infrastructure and online learning, but still new teaching procedures and especially students' evaluation methods need to be developed if we want to preserve the high educational status of Europe's Higher Educational Institutions (HEI).

In **Cyprus**, during the Pandemic and the "lock downs" enforced, the Ministry of Education and Culture made the necessary arrangements and requested from the teachers in schools "to go online". The teachers had to face many difficulties when preparing the "online" classes because they were not prepared to do so. Integration of

ICT in education is not easy; tools (software and hardware), methodology, ethics, curricula, procedures etc., should be considered and adapted under the new environment. However, in a few months, this new experience started developing and the online teaching situation became better, but still with a lot more to be done. Many challenges had to be faced, sometimes when using only online teaching and sometimes when using the "blended" teaching (combination of online and physical presence). Universities and other Higher Education Institutions had to adapt "On line" teaching, to continue with their activities. Their teaching content and methodologies changed to "online" teaching, based on a reflection from an urgent and unprecedented perspective. The Universities responded positively to this new situation, according to their ICT capabilities and the levels of experience of technology use they had. However, their adaptability to practices of e-learning or blended teaching was not very easy or by all Universities equally responsive. The use of new technologies in education processes requires a lot of organisation, necessary knowledge and competences. It is necessary to update the staff (teachers, researchers and administrative staff) who need to adjust themselves in the new educational environment. This was not and still is not easy, because there are no specific guidelines and methods for online teaching and learning. It is very difficult to interact with "students" via screen. In terms of network infrastructure and the use of new technologies and "online" teaching and learning, Universities in Cyprus, were in a better position compared to our schools. However, new "online" teaching methodologies and evaluation processes and methods need to be developed, to maintain high quality standards in the Higher Education.

Ireland's National Skills Strategy 2025 affirms the government's vision for Ireland to be renowned as a place "where the talent of our people thrives […] through the effective use of technology to support talent and skills provision, to grow enterprise and to enhance the lives of all within society" (DES 2016). The Department of Further and Higher Education, Research, Innovation and Science launched a three-year strategy (2021 – 2023) with six overarching strategic goals - talent, innovation, inclusion, international, governance and capacity. One of the goals of this strategy aims to "support researchers, experts, and enterprise in the development of innovative modes of engagement, new skills and new technologies, to enable people in Ireland to grow and adapt to living and working sustainably in an increasingly global, digital and automated world" (DFHE 2021). This is a new government department in Ireland and digital skill development are a part of its overall strategy for the sector. In relation to developing adult basic digital skills, the department has an action plan to support an Inter Departmental Group to oversee the development and publication of a new 10–year Strategy to transform adult literacy, numeracy, and digital skill levels in Ireland to ensure nobody is left behind.

The idea of the ECOLHE project was born in 2017 and it has been revised and improved. The project was born before the Pandemic, because there was already the clear awareness that the university system had to start dealing with a more intensive use of ICT in teaching and learning processes.

Today, the objectives of ECOLHE are more pertinent than ever. It is a research-intervention project, in the methodological framework of an action-research.

The Project aims at highlighting experiences, practices and competencies of teachers, researches and university staff members active in the digital field, in order to foster the dissemination of best practices in training and skills development for **"online" learning** in higher education (HE), according to the new experience of a hyperconnected reality (Floridi, 2015).

ECOLHE intends to experience **a new online training model** to respond to **new knowledge and skills demands**, in a context of a **universal entitlement to lifelong learning** as set out in the ILO report *The Future of Work* (International Labour Organisation, 2019).

The proposal is in line with the most important recommendations of European Union policies about Learning Quality Assurance for Lifelong Learning:

- the Bologna Process (1999), fostered by the European Area of Skills and Qualifications, refers to the promotion of Lifelong Learning (LLL) and Lifewide Learning (LWL) by online learning in HE.
- the "New Skills for New Jobs Initiative" (2010) and "Modernization in HE" (2012) highlights the relevance of digital competences in the knowledge society and the need to overcome the gap with international competitors in digital field.
- the European framework Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG, 2015).
- the recommendations of the European Union's High-Level Group on the Modernization of Higher Education, which highlight the integration of digital technologies and pedagogies as an integral element of higher education institutions' strategies for teaching and learning (European Commission, 2014).

The proposal is also developed in the perspective of the important work of the High-Level Group on the Modernisation of Higher Education. The High-Level Group on the Modernisation of Higher Education prepared two reports in consecutive years, which stressed the importance of the quality of teaching to achieve the goals that higher education sets as responses to the needs of society (HLGMHE, 2013). Specifically, it is important to highlight two of the recommendations emanating from the second of the reports (HLGMHE, 2014):

- the first one is the Recommendation number 3, which states "higher education institutions should encourage, collect and take into account student feedback, which can detect problems in teaching and learning in advance and facilitate faster and more effective improvements".
- It also calls for "higher education institutions - with the help of public administrations and the EU - should support their teachers to develop their skills and competencies for teaching and learning online and in those other modalities that may open the digital age and should take advantage of the opportunities offered by technology to improve the quality of teaching and learning" (HLGMHE, 2014).

By 2030, university students in the world should reach 414 million and to meet their needs the current rigidity of education and training systems will have to be overcome.

Even more critically, the 2019 Deloitte *Global Human Capital Trends*[1] the report indicates an accelerated need for lifelong learning as graduates currently lack many skills required for today's work and are facing an ever-changing and increasingly complex society that will need continuous learning for the entire life course, both for work and social integration.

Even now it is estimated that after 2020, 90% of the jobs will require IT skills, so it is essential that education systems offer a learning paradigm that not only addresses current skills and knowledge deficits, but helps people become lifelong learners.

Today, it is hard to imagine future learning contexts, formal and not formal, without thinking about the use of innovative ICTs and new ways of online dimension significant involvement.

The principal objective of ECOLHE is to understand the way in which national policies have translated the European policies, and how the universities have translated regulatory constraints in practice with the intent to intercept useful suggestion for policy-makers, decision-makers and Academic Bodies in order to build a European E-learning Higher Education Area, founded on the teacher's professionalization and E-learning Quality Assurance Standard".

ECOLHE will examine national public policies for e-learning in HE related to case studies to study the transformation of key concepts from supranational level to national level (i.e.: dominant rhetoric, orientations, legacies, obligations, risks and opportunities, expectations, educational paradigm and so on), during the implementation of inclusive and LLL processes based on digital technologies.

[1] Source: https://www2.deloitte.com/it/it/pages/human-capital/articles/deloitte-human-capital-trends-2019---deloitte-italy---human-capi.html

The aim of the project is to examine in HE the way in which each university (units of analysis) involved develops its strategic approaches to digitization. Specifically, we will examine the respective micro-policies of each unit of analysis and how they have "translated" the digital challenge into practice, following a national framework.

The contemporary societies are facing some crucial changes. These changes require that Educational Institutions review teaching and learning paradigms, organization, management, evaluation processes, relations systems and competences framework for teaching.

Online delivery is a challenge for Higher Education (HE) and policymaking (Horizon Report 2016; COM/2013/0654 final).

Technology is changing HE, although it is under-utilized (EE.CC, 2016).

ECOLHE has the purposes to contribute in:

- supporting teachers and educators promoting future and transferable skills;
- providing an overall framework of the online learning innovation processes in HE, useful in providing important sources of information to policy and decision-makers;
- enhancing and promoting online quality relationships and e-learning standards.

To reach these purposes, ECOLHE's objectives are:

- **to analyze six case studies** in HE, to examine the way in which each of the universities involved, develop their own strategic approaches to digitalisation. Many studies focused on these issues: "the majority of European HE institutions has made little progress in adapting the courses that are offered to a student-centred learning model capable of integrating developments and opportunities in technology-enhanced education" (Raetzsch *et al.*, 2016). These case studies, using an organizational empowerment approach, aim to take stock of the current situation and evaluate to what extent there is a deficit in terms of meeting key challenges in European HE (IO1);
- to implement **online training** to empower teachers and researchers to perform online and blended learning, more responsive to the qualitative dimensions of human interaction (IO2);
- to develop **new online environments for HE**, enhancing the gamification logic (IO3);
- to develop a tool for the **self-assessment of HE professionals based on the Symbiotic Learning Paradigm (SLP)**, a novel framework that places the learner at the centre and enables a hyper-collaborative relationship between stakeholders and HE (IO4);

- **guidelines** in order to furnish to Academic Bodies useful instruments and recommendations to run digital transformations in HE (IO5);
- to favour social innovation in online and blended EHEA through the sharing of best practice experimented among country partners (IO2, IO3, IO5 and C1).

ECOLHE aims to support the Digital Agenda for Europe (2010)[2] in providing digital competences and new competences for new jobs and new teaching needs.

Considering this complex framework, the project intends to build bridges and share knowledge between HE institutions and different stakeholders, with the following aims:

- to produce and validate a set of new online Quality Assurance Standards able to consider the qualitative dimension for basic studies of teaching interactions inside online environments.
- to enhance lifelong learning in HE through a focus on professionalization of teachers, so they can effectively respond to and operate in an ever-changing context that demands engagement beyond the traditional concept of university education.
- to the spread of best practices at European level, to:
    - provide decision-makers and institutions useful data for the definition of intervention strategies;
    - contribute to the European debate on the modernization of HE in the digital age;
    - promote a digital culture, through a multi-stakeholder approach that takes account of the systemic complexity introduced by ICT. They involved contexts and learning models, transforming all social and organizational practices;
    - develop a new pedagogical approach for an innovative vision of European e-learning in HE, through the production of an innovative perspective, more careful to the qualitative dimension of online teaching and key teaching competences in the digital era;
    - establish cooperation networks and partnership among different educational institutions (universities, research centres, training institutions, digital publishers and developers), offering a replicable model of research-intervention / action-research? In the area of experimental educational research. Thanks to the partnership among those organisations and HE associations, and according to a logic of co-construction and co-evaluation, ECOLHE will involve key actors of the

[2] COM(2010)245 final. COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. A Digital Agenda for Europe. Available online at: https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A52010DC0245.

HE system among staff, teachers, researchers, PhD, students, to ensure an organizational empowerment approach necessary for sustainable results at the end of the project.

To achieve these goals, ECOLHE will implement different activities and outputs:

- analysis of organizational and teaching models, with reference to the role of HE in promoting innovation and teaching quality (IO1-IO5);
- the empowering of teachers' digital competences and strategies for online teaching (IO2-C1);
- the enhancing of digital tools and environments for lifelong learning, inclusion, diversity and innovation (IO3);
- the continuous teachers' professional development (IO4-C1).

1. Theoretical framework

Giulia Cecchini

Emanuela Proietti

Introduction

Today, maybe more than in the past, the challenge of lifelong learning and guidance new paradigms for higher education institutions is significant. More than ever, universities are expected to play a new important role in the provision of innovative teaching and learning processes and counselling services to help people navigate the recurrent transitions in their lives.

Universities should be able to tackle career changes and transitions related issues, taking into account the learning and skills life cycle to develop a process in support of professional and personal development projects. These needs and changes require an intervention at the institutional level, with particular reference to the **University Third Mission** and its new role in the territorial welfare development (Carayannis & Campbell, 2009; Etkowitz & Leyedesdorf, 2000).

The **paradigm of the learning society** (Jarvis, 2012) and the **changes of the world of work** ask Universities to reflect on their role and learning practices in contemporary societies.

Jarvis (2012) proposes three different interpretations of learning society, based on existing literature. The first refers to a futuristic or, rather, idealistic concept, to the learning society as an educational society: as an ideal to strive for which can be achieved only through a reform of public educational institutions. The second refers to the learning market, in which the production of knowledge became an industry in the contemporary consumer society; it cultivates people's desire to learn, so that they can take part in contemporary society. Today, it is possible to learn in a fun way – as consuming is a fun action: thanks to countless tools, exposure to different environments, without limits of time. Providers of these learning sources are not educational institutions, thus pressuring the latter to change their approach quickly. Finally, the third refers to the reflexive society; reflexive learning is a symbol of the learning society. Society has become reflexive (Giddens, 1990; Schön, 1983) and in this perspective the knowledge that people acquire is no longer certain and stable forever; its value lies in allowing them to live in this rapidly changing society. A great part of this learning is individual and private, but a part is still public, which challenges public educational institutions, for example in the case of knowledge-based occupations. In addition, the need to acquire new knowledge is pervasive, but learning new things and acting

on their basis always contains an element of risk (Beck, 1986). As Jarvis argued in 2007, also because the crucial role of lifelong learning gained mainstream status only when learning became more work oriented. Now lifelong learning is recognized as a condition for economic competitiveness in a global economy, replacing the earlier conception of lifelong learning as a condition for democratic citizenship (Raggatt, Edwards, Small, 1996).

This turn, together with the marketization of education, produces a further challenge to public educational institutions: to ensure the first function (make people and the economy competitive) without abandoning the latter (being an instrument of peoples' empowerment and of strengthening democracy).

1.1. A universal entitlement of lifelong learning in a changing world of work

Today, working processes require **a new combination of skills and competences** and are characterised by demographic heterogeneity, fluidity and variety, flexibility, responsible autonomy, collaboration, temporal intensity, vision and not just performance (Bagnara, 2010).

The progress of the division of labour generates more knowledge-based work, new jobs and the rise of new social groups in search of recognition, as well as instability, precariousness and new forms of inequality (Butera & Di Guardo, 2010; Gallino, 2014; Negrelli, 2013).

In the knowledge economy, a worker is required to be increasingly educated and trained, creative, resourceful, flexible, autonomous and responsible; a significant dimension of the "know-how" aspect of work tends to expand. Greater responsibility attached to the role also means more complexity of the performances, but, in many cases, work becomes more precarious, there is not much recognition in terms of status and dignified working conditions, as active support for welfare, resulting in increased difficulty to get a good job, stable and gratifying (Negrelli, 2013).

Work environments are expected in the near future to be characterized by greater autonomy, less routine activities, greater use of ICTs, less physical exertion and greater social and intellectual tasks (CEDEFOP, 2018).

Organisations are increasingly characterised as **learning organizations,** subject to solicitations that transform their distinctive features in relation to structures, processes, but also to their culture, towards new logics, which are more open, less hierarchical, flat, networked and *adhocratic* (Cocozza, 2012; 2014).

Workers have to face a growing number of diverse challenges, which have continually evolving implications: to adapt the ability to learn to new situations and problems, develop an ability to learn quickly. Coming times are those of research and discovery, information overload, compliance to legislation and making sense of data (Al-Kofahi, 2018).

The **lifelong learning key competences** and the **learning to learn competence** - as strategic resources for living and working - redefine the educational, political and social dimension that qualifies the relationship between state and citizen, in a new, more inclusive and democratic form.

In this framework, lifelong learning becomes a requirement, but also an entitlement.

Universities are tested about their capability to offer a fundamental contribution in the construction of this universal entitlement and giving it effective responses. Today, the entitlement of persons to learn lifelong and to see recognized their non-formal and informal competences is stressed and required by different Recommendations of European Union and national decrees and laws. A goal of the project is to examine and understand which can be the role of the University in giving significant contribution in this direction, thanks to an important use of ICTs, too.

The landmark report by the ILO Global Commission on the Future of Work, *Work for a brighter future* (2019), examines how to achieve a better future of work for all at a time of unprecedented change and exceptional challenges in the world of work.

Among the key issues considered by the Commission are new forms of work, the institutional ramifications of the changing nature of work, lifelong learning, greater inclusivity and gender equality, the measurement of work and human well-being, and the role of universal social protection in a stable and just future of work.

Countless opportunities lie ahead to improve the quality of working lives, expand choice, close the gender gap, reverse the damages wreaked by global inequality and much more, but, as the Report highlights, yet none of this will happen by itself.

Forging a new path requires committed action on the part of governments, employers' and workers' organizations by reinvigorating the **social contract**.

The report calls for a **human-centred agenda for the future of work,** which strengthens the social contract by placing people and the work they do at the centre of economic and social policy and business practice.

This agenda consists of **three pillars of action,** which in combination would drive growth, equity and sustainability for present and future generations:

1. **increase investment in people's capabilities:** if people are to thrive in a carbon-neutral digital age, the broader dimensions of development and progress in living standards need to be considered, including the rights and enabling environment that widen people's opportunities and improve their well-being. Recommendations concern: lifelong learning for all; supporting people through transitions; a transformative agenda for gender equality; strengthening social protection.

2. **Increase investment in the institutions of work:** it is fundamental to strengthen and revitalize the institutions of work. From regulations and employment contracts to collective agreements and labour inspection systems, these institutions are the building blocks of just societies. They forge pathways to formalization, reduce working poverty and secure a future of work with dignity, economic security and equality. Recommendations concern: establishing a universal labour guarantee; expanding time sovereignty; revitalizing collective representation; technology for decent work.
3. **Increase investment in decent and sustainable work:** the major economic shifts under way – involving new technologies, demographic upheaval and climate change – will have both disruptive and transformative effects on our economies and on work. Major investments are needed to shape and guide these transformations to create decent work. Countries must now prioritize long-term, sustainable investments that favour human development and protect the planet, in line with the UN 2030 Agenda for Sustainable Development. Recommendations are: transforming economies; a human-centred business and economic model.

ILO (2019) explains **as a universal entitlement to lifelong learning** "enables people to acquire skills and to reskill and upskill. Lifelong learning encompasses formal and informal learning from early childhood and basic education through to adult learning. Governments, workers and employers, as well as educational institutions, have complementary responsibilities in building an effective and appropriately financed lifelong learning ecosystem" (ILO, 2019, p. 11).

Lifelong learning encompasses formal and informal learning from early childhood and basic education through to adult learning, combining foundational skills, social and cognitive skills (such as learning to learn) and the skills needed for specific jobs, occupations or sectors. **Lifelong learning involves more than the skills needed to work; it is also about developing the capabilities needed to participate in a democratic society.** It offers a pathway to inclusion in labour markets for youth and the unemployed. It also has **transformative potential:** investment in learning at an early age facilitates learning at later stages in life and is in turn linked to intergenerational social mobility, expanding the choices of future generations.

"Establishing an effective lifelong learning ecosystem is a joint responsibility, requiring the active engagement and support of governments, employers and workers, as well as educational institutions. For lifelong learning to be an entitlement, governments must broaden and reconfigure institutions such as skills development policies, employment services and training systems to provide workers with the time and financial support they need to learn. Workers are more likely to engage in adult learning where they are assured of continuity of income and labour market security. Employers' and workers' organizations also have a leading role

to play in this ecosystem, including through anticipation of future skills requirements as well as participation in their delivery" (ILO, 2019, pp. 30-31).

Digital technologies open new possibilities for broad participation in training, as well as the possibility to overcome time and resource constraints through flexible and shorter learning pathways. Their quality needs to be assured. This must be in the context of access to universal quality education, delivered by well-trained and well-paid teachers, whose skills, expertise and mentorship cannot be replaced by technology.

ILO recommends that governments create quality assurance mechanisms for lifelong learning and, together with employers and workers organizations, monitor the effectiveness of the lifelong learning system.

The lifelong learning issue is deeply connected with the lifewide learning: **if learning is to become truly lifelong, competences must be portable.** This requires establishing a common competences recognition framework, at both the national and international level (ILO, 2019).

Universities - and the higher education and training system - have a crucial cultural and political role.

Universities are called to prepare students - and to accompany adult learners who return to study - for the challenges of today's world of work; to become "self-navigators" (Wyn, 2014); through innovative, multidisciplinary, open, pioneering learning processes.

Universities should complete their transformation from "exclusive owners" of knowledge to organisers, enhancers and promoters of widespread knowledge in society and the world of economy. While not forgetting, of course, the creation of new knowledge, which remains a distinctive element of Universities, through research. The issue is how to ensure teaching and learning in the online university (Capogna, 2008; Capogna, 2015; Capogna, Mustica, 2016). **It is strange that this aspect has been analysed especially only in terms of new teaching methodologies, which put the learner at the centre, without realising that the centrality of the learner also changes the role of the university** (Palumbo & Proietti, 2019).

Universities have an important political role to play, facing the contradictory messages sent to learners from contemporary society. On one side, the pressure on individuals, presented as the only ones responsible for their future, called to solve through their life trajectories the problems that society is not able to face. Universities cannot ignore the pressure on individuals, and must answer with stronger services for guidance, lifelong learning, recognition of competences (Capogna, 2011b; Palumbo and Startari, 2013; Palumbo & Proietti, 2018; Proietti, 2018; 2019). On the other side, Universities must fulfil the task of soliciting critical thinking and awareness of learners as citizens and strengthen their ability to be active citizens. This can happen in two ways. Firstly, by cultivating the **critical thinking** that has always characterized universities and has often justified the suspicion

with which power holders have considered it: indispensable for the progress of science, but dangerous for social consensus, for privilege preservation and for the reproduction of inequalities. Secondly, promoting **forms of social innovation and participatory social design** that enable scientific knowledge to enrich social life, from welfare services to the circular economy to environmental sustainability (Palumbo, Proietti, 2019).

Moreover, of course, in the framework of the ECOLHE specific objectives, how digital technologies can support and enhance this wide and complex role?

1.2. The need of a new paradigm for *ONLIFE*

In February 2012, the European Commission (DG Connect) launched the "ONLIFE Initiative. A Concept Reengineering Exercise" within the context of the Digital Agenda for Europe.

Initiated by Nicole Dewandre of the EC and chaired by Luciano Floridi (University of Oxford), scholars from various academic backgrounds were invited to discuss **the impact of information and communication technologies (ICTs) on individual, social and public lives.** Of particular concern were the policy-relevant consequences of ICT-related developments.

The European Commission organized the research to try to answer a question: what is the impact of information and communication technologies (ICTs) on the human condition?

It is a very profound and radical question.

The final publication of the research, entitled *The Onlife Initiative: concept reengineering for rethinking societal concerns in the digital transition* (Floridi, 2014), collects the work of the Onlife Initiative. It explores how the development and widespread use of ICTs have a radical impact on the human condition.

Taking Hannah Arendt's *The Human Condition* (1958) as an initial inspiration, the authors "sought to better understand and articulate the interactions of ICTs with notions of public space in particular and our contemporary lifeworld more generally. As the subtitle "Concept Reengineering Exercise" indicates, the initial focus of this exercise was on re-assessing the conceptual toolbox with which we aim to understand and address these changes" (Simon & Ess, 2015, p. 157).

The concept of ONLIFE refers to the strong distinctions between our offline and online lives and experiences that characterized earlier conceptualizations. ONLIFE designates the transformational reality that in contemporary developed societies, with few exceptions, our offline and online experiences and lives are inextricably interwoven (Floridi, 2007). Once such new conceptual foundations were in place, we could then develop concrete, policy-relevant proposals for what would constitute the good life in a digital or hyper-connected

era. "That is, one grounding for the specific proposals articulated in the Manifesto - e.g. care for our attentional capacities, in part as fostered by new digital literacies - is through virtue ethics and its thematic foci on flourishing, contentment (eudemonia) and harmony. The larger aim was to offer more effective policy guidance for ICT design and deployment" (Simon & Ess, 2015, p. 158).

The Manifesto (Floridi, 2014) highlights how ICTs are not mere tools but **rather social forces that are increasingly affecting our self-conception (who we are), our mutual interactions (how we socialise); our conception of reality (our metaphysics) and our interactions with reality (our agency).** In each case, ICTs have a huge ethical, legal, and political significance, yet one with which we have begun to come to terms only recently.

The impact exercised by ICTs is due to at least four major transformations[3]:

- the blurring of the distinction between reality and virtuality;
- the blurring of the distinction between human, machine and nature;
- the reversal from information scarcity to information abundance;
- the shift from the primacy of stand-alone things, properties, and binary relations, to the primacy of interactions, processes, and networks.

Such transformations are testing the foundations of our conceptual frameworks. Our current conceptual toolbox is no longer fitted to address new ICT-related challenges. This is not only a problem. **It is also a risk,** because the lack of a clear understanding of our present time may easily lead to negative projections about the future.

The goal of The Manifesto is that of **contributing to the update of our philosophy**. It is a constructive goal. The essay is meant to be a positive contribution to rethinking the philosophy on which policies are built in a hyperconnected world, so that we may have a better chance of understanding our ICT-related problems and solving them satisfactorily.

The Manifesto aims to start a reflection on the way in which a hyper-connected world calls for rethinking the referential frameworks on which policies are built, starting from some principal reflections.

The first, concern ideas that hinder policy making's ability to tackle the challenges of a hyperconnected era: some constraints and affordances of the computational era profoundly challenge some of modernity's assumptions (despite the deep connection between artefacts and nature, an alleged divide between

[3] Those transformations are fully described in the Onlife Initiative Background document available at: https://ec.europa.eu/digital-agenda/en/onlife-initiative.

technological artefacts and nature continues to be assumed; ICTs challenge some assumptions of modernity, by calling for notions of distributed responsibility and they destabilize and call for rethinking the worldviews and metaphors underlying modern political structures).

Fears and risks in a hyperconnected era are numerous. In modernity, knowledge and power are deeply linked to establishing and maintaining control, but, paradoxically, often it is hard to identify who has control of what, when, and within which scope; experiencing freedom, equality and otherness in public spheres becomes problematic in a context of increasingly mediated identities; the abundance of information may also result in cognitive overload and distraction.

Authors of the Manifesto ask themselves and us: "what does it mean to be human in a hyperconnected era?" To give answers to this question is necessary to grasp some challenges:

- the fact that the environment is pervaded by information flows and processes does not make it an omniscient/omnipotent environment. Rather, it calls for new forms of thinking and doing at multiple levels, in order to address issues such as ownership, responsibility, privacy, and self-determination;
- complexity can be seen as another name for contingency. Far from giving up on responsibility in complex systems, there is a need to re-evaluate received notions of individual and collective responsibility;
- the distinction between public and private has often been grasped in spatial and oppositional terms: the home versus the agora, the private company versus the public institution, the private collection vs. the public library, and so forth. The deployment of ICTs has escalated the blurring of the distinction when expressed in spatial and dualistic terms.

Some conceptual shifts with policy-relevant consequences for a good on life governance seem to be necessary. Today, the self is deemed to be free, and "free" is frequently understood as being autonomous, disembodied, rational, well-informed and disconnected: an individual and atomistic self. Is it time to affirm - as the authors think - in political terms, that our selves are both free and social? That freedom does not occur in a vacuum, but in a space of affordances and constraints? The development of a critical relation to technologies should not aim at finding a transcendental place outside mediations offered by technologies, but rather at an immanent understanding of how technologies shape us as humans, while we humans critically shape technologies. Societies must protect, cherish and nurture humans' attentional capabilities. This does not mean giving up searching for improvements. Rather, the authors assert that attentional capabilities are a finite, precious and rare asset; respect for attention should be linked to fundamental rights such as privacy and bodily integrity, as

attentional capability is an inherent element of the relational self for the role it plays in the development of language, empathy, and collaboration.

Floridi (2014b) explains that "rethinking and developing new forms of education are certainly among the most exciting challenges of our time. There are great opportunities, but also a serious risk of missing them. In the same way as we lack a post-Westphalian way of approaching politics, likewise we are still missing a post–Guttenberg way of approaching pedagogy. The difficulty is further exacerbated by the mental constraints imposed by the overbearing presence of the book for so many centuries, which makes it hard to consider alternative forms of education (think for example of the written assessment procedure); and by the omnipresence of ICTs, which constantly distract our reflection into believing that the real issue concerns which technical solutions are or will be more feasible to manage learning processes involving digital natives, when in fact the fundamental problem is not how but what: what kind of knowledge will be required and expected when living onlife" (pag. 22).

The Manifesto **launches an open debate** on the impacts of ICTs on public spaces, politics and societal expectations toward policymaking in the Digital Agenda for Europe's remit. More broadly, it helps start a reflection on the way in which a hyperconnected world calls for rethinking the referential frameworks on which policies are built.

An objective of the ECOLHE project is to participate actively in this debate.

1.3. The digital transformation in a theoretical perspective

"Since 2006, the Joint Research Center has studied "Prospective Insights in ICT R&D". Analyses the supply of Information and Communications. Technologies (ICT) and the investments in Research and. Development (R&D) in ICT in Europe, with comparison to major competitors worldwide. This research has served to assess the impact of policies and to guide future policy developments in the digital (European Commission, 2020, pp. 48-50).[4]

The digital transformation (DT), its components, its strategies and its impact on companies operating efficiency – are all topics that are frequently debated during the last two decades.

As we announced in the introductory part and as we will argue in the following paragraphs, The DT is one of the policy areas of the European Commission and the Organisation for Economic Co-operation and Development of education and training.

[4] More information are available on: https://ec.europa.eu/jrc/en/predict.

In an attempt to frame the theme of digital transformation from a theoretical point of view, it is necessary to analyze its "approached from a Institution point of view":

First, digitalization is an integral part of the unrestrainable development of society, economics and development. Digitalization and globalization – or vice versa – are processes that determine our existence nowadays (Verina, Titko 2019).

According to the European Commission forecasts, a “transformative industrial and technological revolution” will be one of the key global trends to 2030. “All aspects of society – such as politics, governance, education, science, lifestyles, collective intelligence networks, the setting-up of open systems, and health, including the transformation of the human genome – will be transformed by technological breakthroughs” (ESPAS, 2015).

In 2017, the Organisation of Economic Cooperation and Development (OECD) launched a new global project – “Going Digital: Making the Transformation Work for Growth and Well-being”. Its goal is “to help policymakers better understand the digital transformation that is taking place and create a policy environment that enables their economies and societies to prosper in a world that is increasingly digital and data-driven” (OECD, 2018).

The Digital Maturity Framework for Higher Education Institution which synthesizes the main existent frameworks/models related to the integration of digital technologies in HE (Đurek, Begičević Ređep, Kadoić, 2019) and will be recovered in the presentation part of the *methodologies and tools* used in the ECOLHE project.

To open a debate among Ecolhe partners, we can start sharing three different definition of digital learning, for to grasp the meaning of the role of Digital:

- “Digital transformation is characterized by a fusion of advanced technologies and the integration of physical and digital systems, the predominance of innovative business models and new processes, and the creation of smart products and services” (European Commission, 2019);
- “A process through which companies converge multiple new digital technologies, enhanced with ubiquitous connectivity, with the intention of reaching superior performance and sustained competitive advantage, by transforming multiple business dimensions, including the business model, the customer experience (comprising digitally enabled products and services) and operations (comprising processes and decision-making), and simultaneously impacting people (including skills talent and culture) and networks (including the entire value system)” (Ismail, Khater, and Zaki, 2017);
- “Digital transformation is the use of technology to radically improve the performance or reach of an organization. In a digitally transformed business, digital technologies enable improved processes, engaged talent, and new business models” (Deloitte, 2018)

These three different but complementary expressions help to identify the key points that digital transformation introduces in the contemporary contexts; these key points are those, which we find in the lifelong learning place par excellence, Universities:

- the centrality of person, despite the power of technology.
- the transversal influence of technologies in the development of the training, organizational and social area.
- the importance of performance as "engaged talent";

A key challenge for the future of the transformation of education systems and the evolution of learning processes is the dissemination of young digital natives, students, e.g. from the generation of those born and raised in an era of maximum diffusion of new information and communication technologies (Prensky, 2001).

In the current setting/scenario, where digitisation of processes is extremely widespread, the interactivity and the connectivity help to define new languages and new ways of communicating.

Indeed, as regards the role of new languages and the low degree of pervasiveness in the use of technologies, effective integration of ICT in teaching and learning processes has not yet been established, as they are still relegated to computer labs or very traditional administrative practices (Cocozza, 2012).

As suggested by Cocozza (2020), the transformation of organisational, professional and educational models that radically alter the rules, boundaries and autonomy of those who work daily in educational contexts, should suggest a global rethink of the education model and the idea of digital innovation to be pursued (Capogna, 2014; Capogna, Cianfriglia, Cocozza, 2020).

This project aims to recover a need that the pandemic COVID-19 has brought to light: the risk of loss of professional identity for the individual, the teacher, the teacher who should be the manager of the technologies to be used in HE. For promoting inclusion, innovation and lifelong learning, it is necessary to outline the criteria for involving the actors, and then to analyse, to define, to train - and training in - the skills needed to manage the digital transformation.

1.4. The online and blended learning in the European Higher Education Area for promoting inclusion, lifelong learning, and innovation.

Since 1999, by the Bologna Process, the European countries have initiated a development program devoted to building a European HE Area, able to face digital challenges (ECER, 2016), by Quality Assurance (QA); among its objectives, it includes the enhancement of LLL through ICT and the definition of uniformed e-learning quality assurance procedures (ENQA, 2009).

As Capogna says (2017), at the current state, Education Systems are facing the challenge of web giants (Google, Amazon, Facebook, Apple), which are conquering an increasing education market.

In the next few years, Universities must interface and dialogue with these actors and their high-quality digital expertise and high-performance.

In recent years, several research promote the expansion of e-learning in HE. However, **these works show a partial vision of this change:** they are not able to provide an overall framework of the online learning innovation processes. They focus mainly on technological aspects, imagining the development of increasingly sophisticated online learning platforms, cognitive processes, or management aspects such as analytics standards of learning.

The problem in the incorporation of opportunities offered by the online learning is the growing importance of the transmissive mode in which teaching corresponds to the transmission of information and knowledge, ignoring the constructive, emancipatory and transformative value of the communicative relationship, which should be the distinctive feature of online learning in HE oriented to teaching that increasingly facilitates flexible delivery, part-time, new forms of credentials in a context of lifelong learning in which learners will interact with HEs, in-work training and an increasingly diverse range of educational providers throughout their life course.

Currently, there is a poor definition of e-learning standards able to inform academic governance and stakeholders about the quality of e-learning processes (Capogna, Sangrà, 2016). The definition of these standards is at the intersection point among policy, technology, education, society and market. Several private standards have been disseminated in the past decade (OLC, Quality Matters, ECB Check, e-XCELLENCE, OPAL etc.). Most of them consider quality standard, mainly, through a quantitative perspective for benchmarking goals, missing the main important aspects of the learning process: the educational relationship among teachers, students, and groups inside new techno-social environments.

1.5. Competences for a culture of lifelong learning, democracy, and work

Over time, the issue of competences has become an essential element of the recommendations of the European and international institutions on education and training and often on employment.

Competences are considered a lever for the development of a culture of lifelong learning and democracy. About this notice growth, it is necessary to underline two key passages: the first related to the 2006 Recommendation on key competences for lifelong learning, revised in 2018 and the second of 2016, referred to the approval of a model for the development of competences for a democratic and intercultural culture of the Council of Europe.

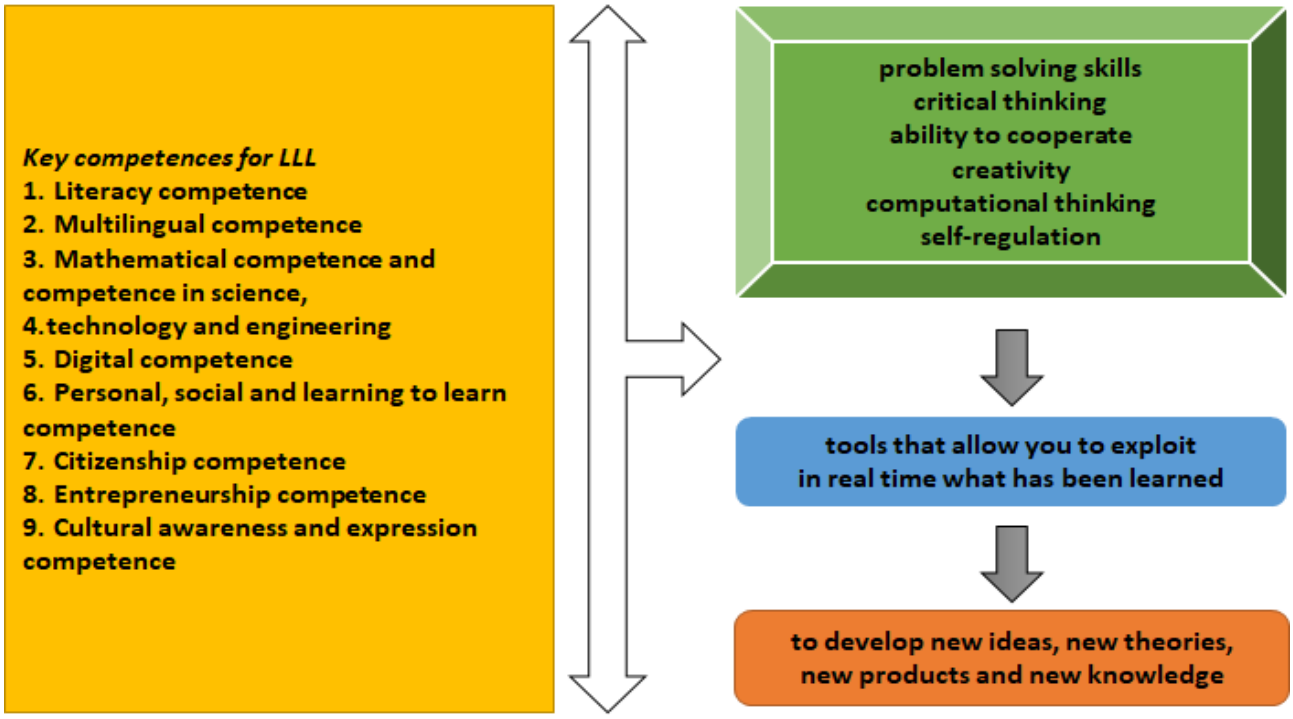
Since its adoption, the Recommendation of 2018 represents an important reference document for the development of competence-oriented education, training and learning systems. Nevertheless, the competences

required today have changed: more jobs are automated, technologies play a greater role in all areas of work and daily life, and entrepreneurial, social, and civic skills become more important to ensure resilience and the ability to adapt to changes. The document highlights the need to equip oneself with a combination of knowledge, skills, and attitudes appropriate to the global context, now considered necessary for personal fulfilment and development, active citizenship, social inclusion, employment, and social cohesion. Key competences become essential in the knowledge society, as they ensure greater flexibility and adaptability on the part of workers to a constantly changing and increasingly interconnected world; represent a factor of primary importance for productivity, competitiveness, and innovation; they support motivation and contribute to worker satisfaction and job quality.

The lifelong learning perspective can be contextualized in competences and, through these, longitudinally crosses the education and training systems; it closely links them to the world of work and to a broad exercise of the right of citizenship.

The Recommendation emphasizes the value of complexity and sustainable development; takes into account a growing need for greater entrepreneurial, social and civic skills, considered indispensable to ensure resilience and the ability to adapt to changes (Fig. 1).

Fig. 1 - Key competences for lifelong learning



Source: COUNCIL RECOMMENDATION of 22 May 2018 on key competences for lifelong learning (Text with EEA relevance) (2018/C 189/01) (our processing)

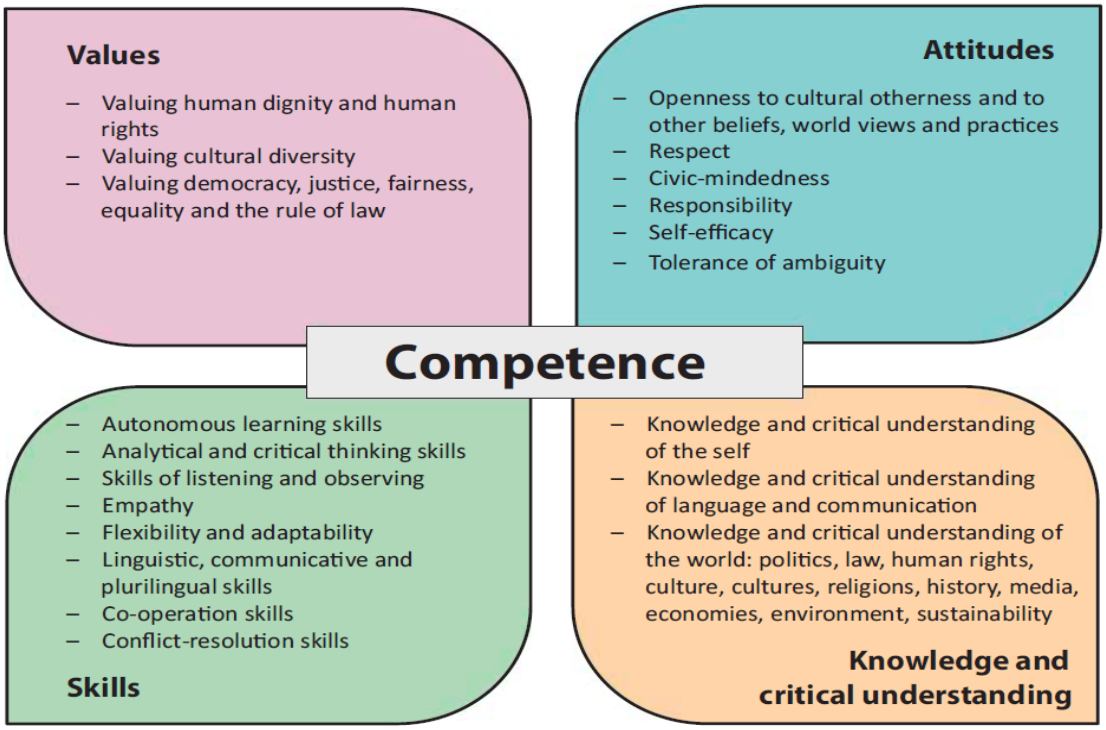
These competences appear necessary to live and work in post-modern society and in a post-fordist world of work, because they are those that everyone needs for personal fulfilment and development, employability, social inclusion, a sustainable lifestyle, a fruitful life in peaceful societies, health-conscious life management and active citizenship.

In 2016, the Council of Europe proposed a conceptual model of skills considered essential for those who intend to learn to contribute effectively to a culture of democracy and to live together in peace in democratic and culturally diverse societies.

The objective of the Council is to encourage the use of the model to inform decision-makers in the educational field, to support related systems, helping them to prepare students to become competent democratic citizens.

In the model, democratic and intercultural competence is defined as the ability to mobilize and use relevant values, behaviours, attitudes, knowledge and/or an understanding, to respond appropriately and effectively to the needs, challenges and opportunities that arise in democratic and intercultural situations. The model organizes the 20 selected competences into four categories (Fig. 2), which allow an individual to participate effectively and appropriately to a culture of democracy.

Fig. 2 - The 20 competences included in the model



Source: Council of Europe, 2012

Although the document runs the risk of making democracy appear as an end in itself value, rather than as a misleading dimension for a social and educational dialogue; almost as a glue of diversity, rather than as a space for the construction of one's own identity, it is possible to trace in it an important basic inspiration. In complex societies, the foundational values and attitudes must be based on listening, respect, cooperation, and they have to challenge themselves with a solid knowledge and critical understanding of reality.

The fourth industrial revolution - characterized by the *diffusivity* of technologies and digital ones, from the transition from industry 4.0 to business 4.0, up to becoming work 4.0 (Cipriani, Gramolati, Mari, 2018). Together with other socioeconomic and demographic factors - is producing significant changes in organizational structures, bringing out new types of jobs, which over time will partially or totally replace those currently existing. Consistently with these transformations, competences required by different occupations and organizational roles are also continuing to change and will increasingly transform the way and the place in which people work.

The World Economic Forum's 2018 Report, *The Future of Jobs*, aims to provide information on the extent of these trends, their impact on job functions, employment levels and competences. It is likely that the rapid shifting of the boundary between the work performed by humans and those performed by machines and algorithms, due to technological innovations, will produce significant transformations in the global labour markets. The report highlights that if these transformations were to be managed wisely, they could lead to a new era of good work, good jobs, and a better quality of life for all, but if managed poorly, they will pose the risk of widening gaps in employment. Competences, greater inequality, and wider polarization. In many ways, the time to shape the future of work is now: the document aims to provide tools, which can support answers to the critical questions facing enterprises, governments and workers in the near future, but the horizon is already in 2022.

The study findings notice that as workforce transformations accelerate, the window of opportunity for proactive change management is closing rapidly and governments, enterprises and workers are called upon to proactively plan and implement a new vision for the global job market.

The key findings of the Report are:

- the main change drivers are four specific and leading technological developments: the high-speed mobile Internet; artificial intelligence; the widespread adoption of big data analytics; cloud technology.
- the phenomenon of accelerated technology adoption: by 2022, according to the declared investment intentions of the companies interviewed for the report, 85% of respondents will have extended the adoption of big data analysis of users and entities, of technologies such as the internet of things, market-enabling apps and web applications, cloud computing, machine learning and augmented and virtual reality;

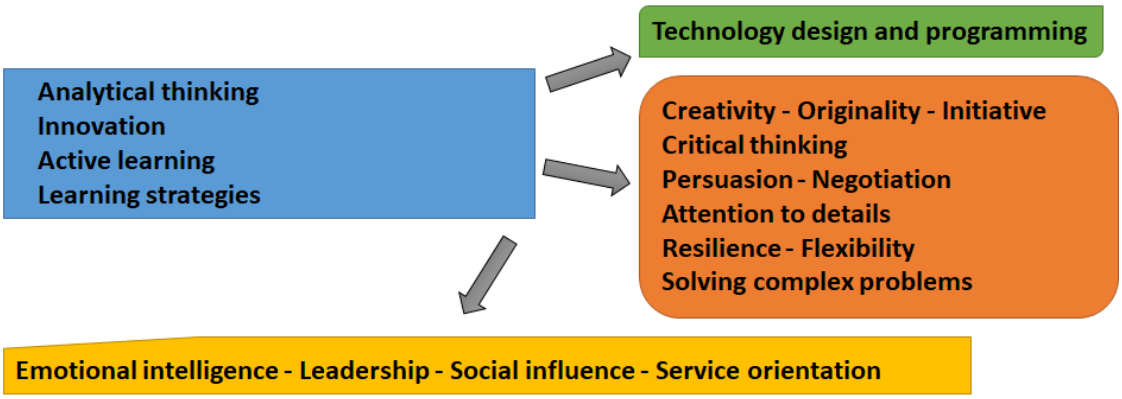
- the growing trends in robotization: if the use of humanoid robots is still limited by 2022, the adoption of the various robotic technologies is subject of great attention from companies (with the necessary differences by sector);
- changes in the geography of production, distribution and value chains: by 2022, 59% of employers interviewed expect to have changed the way they produce and distribute, changing the composition of the value chain and almost the half expect to have changed their geographic base operating area;
- types of employment shifting: nearly 50% of companies expect automation to lead to some reduction in their full-time workforce by 2022; 38% to extend their workforce to new roles capable of improving productivity and more than 25% expect automation to lead to the creation of new roles in their company;
- a new human-machine frontier within existing activities: in 2018, 71% of the total hours of activity in the 12 sectors covered in the report were worked by humans, compared to 29% by machines. By 2022, this average is projected to have increased to 58% of human activity hours and 42% by machines. An important fact is that even those tasks that have remained predominantly human so far (communicate and interact - 23%; coordinate, develop, manage and advise - 20%; as well as reasoning and decision making - 18%) will begin to be automated (they will rise to 30%, 29% and 27% respectively);
- a positive outlook for jobs: optimistic estimates of the growth of emerging professions should offset the decline in jobs;
- emerging roles in the work demand: a growth in roles is expected that significantly involve the use of emerging technologies. But roles that leverage distinctly "human" skills are also expected to grow, such as customer service agents, sales and marketing professionals, training and development, people and culture, organizational development specialists and innovation managers;
- growing competences instability: considering the above, the vast majority of employers interviewed expect that, by 2022, the skills required to fill most jobs will have changed significantly;
- a requalification imperative: by 2022, no less than 54% of all employees will require significant retraining and a skills upgrade. Of these, about 35% is expected to require additional training of up to six months, 9% will require requalification lasting six to 12 months, while 10% will require additional training of more than a year;
- current strategies for addressing skills gaps: enterprises highlight three future strategies for addressing competency gaps widened by the adoption of new technologies. They expect to hire completely new

permanent staff with new technology skills; try to fully automate the affected work activities and retrain existing employees;

- insufficient competences restructuring and improvement: interests of employers with respect to requalificate and updating priorities concern high-profile roles - a choice aimed at strengthening the strategic capacity of their company -, this means that those who most need requalification and competences updating are less likely to receive the necessary training.

The WEF Report states the necessary growing competences (Fig. 3).

Fig. 3 - Competences for future works



Fonte: World Economic Forum, 2018 (our processing)

In the three sets of briefly examined competences, we can trace an important convergence of those considered indispensable today to face the transformations taking place, in all areas of life and, above all, in the world of work. More and more often, these are transversal strategies that allow us to act appropriately, creatively, and decisively in different contexts.

Considering the above, the higher education environment will change significantly over the next 15 years. All universities wishing to remain competitive will need to manage this change effectively (Raetzsch, A. et al. (2016). In Fig. 4 some educational megatrends and implications for universities are presented.

Fig. 4 - The nine educational megatrends and implications for universities

Source: Raetzsch, A. *et al.* (2016)

1.6. Key competences for teaching and learning in online and blended environment in HE

Until now, too little time is spent on didactical courses to teach teachers to use ICT with a learning surplus value.

To offer these kinds of courses it is necessary to determine what kinds of ICT competencies teachers really need. In this respect, if we take our cue from the European project U-teacher[5] - a project funded under the European e-Learning initiative for the period December 2004 - June 2005 - it's possible to notice that the competencies of teachers were combined with eight specific ICT-themes[6] - with regard to interaction with

[5] This project is fully described in the Online document available at this link: https://www.cnr.it/it/focus/102-20/uteacher.

[6] That is: Active learning, Direct feedback, Better and more contact with teachers and peer students, Possibilities to learn in different ways, Contextual learning, A larger spread in different ways of teaching and learning.

students, colleagues and stakeholder's relationship. Therefore, this project aimed to understand what the professional profile of a teacher regarding ICT was, necessary to operate in a knowledge society, in continuity with the objectives set out in the Lisbon Strategy.

As stated by the CNR (Italian National Centre and Research), "education and training are essential parts of the Lisbon Strategy and it is only natural that this should be so, because it is above all in education and training systems that knowledge, the primary resource of the knowledge society, is generated, reconstructed and transferred".[7]

This results in a rapid change in knowledge, and therefore technical skills in the use of certain devices.

In this increasingly advanced and faster society, members are subjected to a continuous updating of knowledge. These considerations had already generated the ambitious aim of the European Community, to modernize education and training systems in a perspective of lifelong learning, through a highly articulated work program called "Education and Training 2010".

In the last twenty years, in fact, the theme of teachers and trainers has become central, as an element of substantial importance in generating and implementing policies for the development of continuing and continuing training. For this reason, in this stage, we will try **to identify the emerging key skills for teaching - online and/or blended - in the environment of HE**.

Certainly, the **Key competences for lifelong learning**[8] constitute the first framework to keep in mind. The Council of the European Union adopted a review Recommendation on key competences for lifelong learning in May 2018. It identifies eight key competences essential to citizens for personal fulfilment, a healthy and sustainable lifestyle, employability, active citizenship and social inclusion. **The recommendation is a reference tool for education and training stakeholders.** It sets up a common understanding of competences needed nowadays and in the future. The reference framework presents successful ways to promote competence development through innovative learning approaches, assessment methods or support to educational staff. All learners should achieve their full potential. To fulfil their different needs, the recommendation encourages Member States to: provide quality early childhood education and care, improve school education, and ensure excellent teaching, further develop initial and continuing vocational education and training, and modernise higher education.

[7] More information are available on: https://www.cnr.it/it/focus/102-20/uteacher.
[8] More information are available on: https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en.

A second important source is the **European Framework for the Digital Competence of Educators (DigCompEdu)**[9]: a scientifically sound framework describing what it means for educators to be digitally competent. It provides a general reference frame to support the development of educator-specific digital competences in Europe. DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts.

On this specific topic some of the project partners have already worked in the context of the school[10] and important research results have been presented (Capogna, Cianfriglia, Cocozza, 2020; Sangrà et al., 2020). In the framework of the project, an innovative training path for the development of methodological digital competence was realised[11].

It is very difficult to understand how not digital competent teachers can develop the integration of ICT in the learning process. Nevertheless, the answer to this suggestion is not so simple or trivial. Because it recalls the profound meaning assigned to university teaching.

In this regard, it is possible to identify the most recent key competencies in HE in the European Commission's vision for high-quality digital education, which were recently outlined in the Digital Education Action Plan (2021-2027)[12].

To adapt and to make education and training systems fit for the digital age, an open public consultation has been carried out on the new action plan ran from June to September 2020.

The new action plan aims to promote the development of a highly efficient digital education ecosystem by involving staff and teachers in the flow of digital transformation; in this regard, it will be necessary to:

- In organisational terms, support digital transformation plans at all levels of education and training through Erasmus cooperation projects. Support digital pedagogy and expertise in the use of digital tools for teachers

[9] More information are available on: https://ec.europa.eu/jrc/en/digcompedu.

[10] More information are available on: http://decode-net.eu/ Erasmus+ Project DECODE. DEvelop COmpetences in Digital Era.

[11] The members of the Edul@b research group, of the Open University of Catalonia, have promoted a very interesting and important initiative. The current emergency situation has caused many educational institutions to consider transitioning to online education to provide coverage to their students as long as the instructions for closing schools and universities and home confinement last. So, they wanted to share in solidarity with the group of teachers at different educational levels their experience designing and carrying out online education. Online teaching is not just about posting PDF materials or sending a video sequence recorded by the teacher. It's much more than that. In addition, doing it right is what will allow online education to be considered a high-quality educational modality. Now, however, we need a quick solution to best address the situation we find ourselves in. They present a series of recommendations in the form of a **Decalogue for unexpected online teaching**: http://edulab.uoc.edu/en/2020/03/16/decalogo-para-docencia-linea-inesperada/.

[12] More information are available on: https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_en

through Erasmus Teacher Academies and launch an online self-assessment tool for teachers - SELFIE (Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies) for Teachers.

- On the vocational training level, enhancing digital skills and competences for the digital transformation, in coherence with the DigComEdu and with Digital Education Action Plan (2021-2027).

Technologies have changed the unidirectional transmission of knowledge to a horizontal exchange of information. In higher education, the most important example of using the potential of technologies has been online training. In this scenario, the student has to take an active role: he/she must be at the centre of his/her own learning process, promoting a change of the role of the teacher, which has to create the conditions that enable students to learn.

Considering this change in learning and training, the online teacher must assume different roles: designer, manager, guide, counsellor, facilitator, and assessor of the students' learning process (Guitert 2014).

To pursue this change, the teacher needs to develop active methodologies to facilitate students' acquisition of the skills required as future professionals in today's digitized society. Active methodologies that encourage an active role of the student to build their learning by collaboration, problem solving, such as project or challenge-based learning.

In this sense, teachers, like students, must be digitally competent, that means to adapt teaching competence to a totally digitized world. In short, they have to acquire new skills to respond to these needs.[13]

By Teachers' Digital Competence we refer to teachers' capacity to mobilise and transfer their knowledge, strategies, abilities, and attitudes regarding ICT to real situations in their professional practice to:

- Facilitate students' learning and the acquisition of their digital competence.
- Carry out processes for improving and innovating teaching according to the needs of the digital era.
- Contribute to their professional development in accordance with the changes that take place in society and in schools.

Teachers' Digital Competence refers to both didactic and methodological skills (MDC), but additionally, ICT competence is also needed with reference to the instrumental use of technologies (IDC).

[13] More informations about Teachers' Digital Competence - with particular reference to Catalonia - are available at http://educacio.gencat.cat/web/.content/home/departament/publicacions/monografies/competencia-digital-docent/Competencia-digital_angles_web.pdf)

1.7. Key responsibilities of Academic Bodies to ensure a high quality of online and blended education.

In 2018, a report on Global Quality in Online, Open, Flexible and Technology Enhanced Education: An Analysis of Strengths, Weaknesses, Opportunities and Threats was published by EADTU - European Association of Distance Teaching Universities[14] (Mathes, 2018). The report was developed to provide a platform for the development of guidelines for quality in online, open, flexible and technology enhanced education in all regions of the world.[15]

Some of the main results of this research seem to be very useful as a starting point for the research of ECOLHE.

The regional reports analysed in the global Report outline those distance learning modalities that are most prevalent and growing within the areas of the world analysed (Africa, Arab region, Asia, Europe, Latin America and the Caribbean, North America, and Oceania). What is especially promising and evident globally, is that:

- there is a recognition that quality, on some level, needs to be addressed; however, it is recognized that, for a variety of reasons, this does not always occur.
- In some regions, there is still a stigma attached to distance learning. This is not a new issue with open, online, flexible and technology-enhanced learning, so it is not surprising that this lack of acceptance may result in limited offerings in some countries.

EADTU provided regional expertise from Europe and for this Region, the Report highlights that:

[14] EADTU is a leading institutional network for innovative online, open and flexible universities and is at the heart of the modernisation agenda. It is committed to the Bologna Process and the ET2020 Strategy. Key activities are related to empowering universities in their transition to student-centred online/blended learning; organising online, open and flexible education through inclusive structures and methods, taking HE to students when and where they need it, during all stages of life; promoting quality assurance and accreditation for OOF-HE; opening up education through OERs and MOOCs; flexibilising continuing education and closing the skills gap by short micro-credential programs; organising collaborative programs and mobility, where students learn across national, sectoral and institutional boundaries; and understanding the changing pedagogical landscape in Europe. EADTU has a membership of 25 European countries (represented by online, open and distance teaching Universities, national higher education associations or single universities) covering 200 universities. It offers support to European and national authorities, to HE-institutions, European Universities and other relevant stakeholders by policy events in higher education and sharing expertise within higher education communities. In addition, EADTU is coordinator OF the European MOOC Consortium (EMC) representing 400 higher education institutions. More information is available at: https://eadtu.eu/.

[15] In 2016, ICDE - International Council for Open and Distance Education put out a call to identify candidates to serve as focal points of quality (FPQ) and lead their respective regional task force within the overall Quality Network. This initiative was designed to align with UN Sustainable Development Goal 4: Ensure inclusive and quality education for all and promote lifelong learning. This work was also intended to support UNESCO's higher education initiatives in online, open and flexible learning. The FPQ leaders were also tasked with providing input and contributing to the final report that would provide an overview of regional quality initiatives in online, open and flexible learning.

- within European universities, digital learning environments maintain a strong presence and there seems to be more acceptance related to the value of learning in these modalities.
- the development of blended and online learning does not always appear to be developed through a systematic approach; instead, development may rely on the interest and commitment of individuals resulting in slow and limited implementation;
- there is a need to build competence and expertise in blended and online learning design by offering professional development on relevant topics; however, there may be challenges within academic environments where the culture does not encourage innovation.

One thing that was consistent throughout all of the regional reports was that online, open, flexible and technology-enhanced learning still has significant potential globally.

Each region may face diverse challenges to implementation and growth in the various modalities, but it was also shared that the benefits that are seen from these modalities vary based on the individual needs of a country or region.

Overall, there were three themes that seemed to emerge from the regional overviews:

1. **Quality assurance.** While multiple regions identified quality frameworks that could be used to evaluate effectiveness, there is still an issue with consistent standards being used by governing bodies for quality through the accreditation process. Without standards, it is difficult for an institution to benchmark against others and it creates ambiguity regarding expectations for quality. **This lack of standards** can also create issues with the credibility of open, online, flexible and technology-enhanced learning. Institutions may offer courses or programs that do not incorporate best practices resulting in poor learning experiences for students.

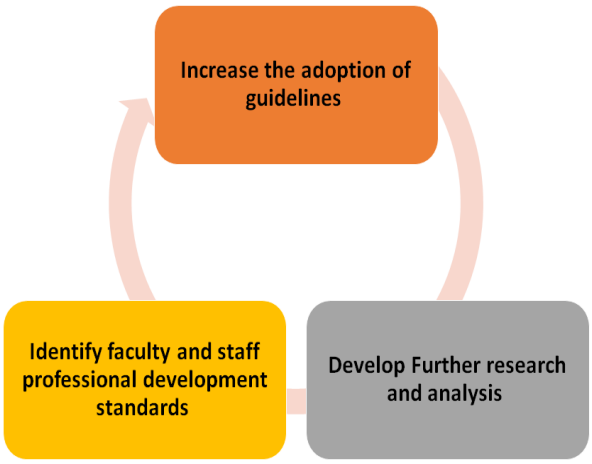
2. **Professional development.** Appropriate training is not always available to build the expertise and skills of faculty and staff responsible for developing and/or teaching courses in these modalities. This can result in a poor teaching experience for faculty and a poor learning environment for students. Without professional development, faculty comfortable teaching in a traditional face-to-face mode may not understand their role in a distance learning environment. In addition, faculty may not understand how to best support students in a virtual classroom.

3. **Societal perception.** In many parts of the world, it is recognized that distance learning can be as effective as traditional learning; however, this is not the case in all regions. The fact that many countries still view learning in these modalities as substandard reflects the need for guidelines and processes to be established that can support and enhance the credibility of distance learning as a whole. This negative perception may also be

influenced by the culture of a country where traditional views on education are pervasive. Overcoming this viewpoint may be more challenging in these environments and require support from higher levels in the university or even governmental bodies.

There are multiple recommendations for next steps in building global quality in online, open, flexible and technology-enhanced learning. The list is not all inclusive, but it is meant to serve as a starting point to help relevant organizations, institutions and governmental agencies support quality in this field.

Fig. 5 - Recommendations for building global quality in online, open, flexible and technology-enhanced learning



Source: Mathes, 2018 (our processing)

As reflected in the ICDE report by Ossiannilsson, Williams, Camilleri, and Brown (2015), there are a few frameworks that currently exist for course-level and program-level quality that can be used to support this work. These could be reviewed and normed as appropriate for various regions to implement. Some research has been done, which includes a Faculty Framework offered through the Online Learning Consortium, which can support the need of development and teaching of courses in these modalities (Mohr & Shelton, 2017).

In European universities, three areas of provision emerge:

- degree education as the backbone of a university.
- continuing education and continuous professional development, which probably will exceed the number of degree students.
- and open education which emerged mainly by the MOOC movement.

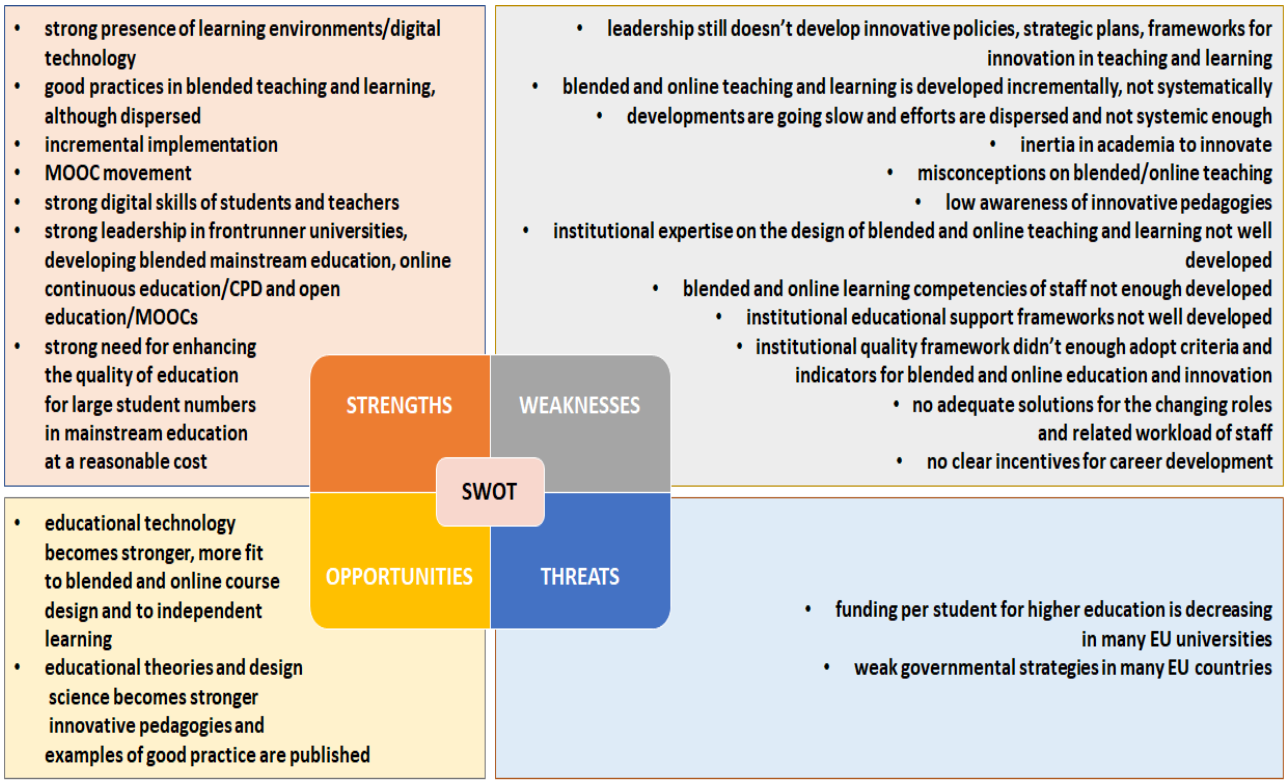
Universities attempt policies and strategies to define their profile in these areas, which can be complementary to each other and to some extent interwoven.

The Report explains as **the rationale for governments to implement quality assurance (QA)** systems or processes is usually two-fold: they wish to be assured that the higher education that they fund is of sufficiently high quality, and they wish to ensure that it is being continuously improved (QE - Quality Enhancement).

In almost all European countries, quality assurance for higher education is achieved through **the establishment of agencies.** Quality assurance agencies, whose role is to assess quality in the learning and teaching business also need at least some expertise in new modes of teaching by online and blended education, which they might best obtain by also having such staff in-house.

From the peer learning activity, the researchers have identified the following main SWOT elements for European introduction and quality assurance of online and blended education (Fig. 6).

Fig. 6 - SWOT for European introduction and quality assurance of online and blended education



Source: Mathes, 2018 (our processing).

1.8. Professional development of teachers in HE

The theme of the Law of Lifelong Learning, as well as being the foundation of what has been argued so far, is the beginning of the path that teachers should develop to combine their valuable and continuous professional development, with the needs of the recipients of their university training courses, the students.

For this reason it may be important to think about how professional development of teachers can represent a two-way dynamic - as an activity directed on the one hand towards himself and his research group and on the other towards the students - and how this bidirectional dimension would lead to thinking of two different paths to integrate digital technologies in a path of professional development. But, defining the research activity can help us immediately to clarify how necessary is a single, homogeneous, integrated integration of ICT or at least if differentiated in some parts, it is possible to propose a holistic character of the professional development of teachers in universities.

Observing the current situation in university and vocational training, Quagliata (2014) differentiates training proposals that use digital platforms for distance training and can fall within the e-learning, from those that should be more properly included in the category of e-teaching.

In fact, the traditional teaching system that characterizes e-teaching provides for an individual study and a scarcely customizable material: in addition, most of the work is prepared by the learner (previously), reducing - or cancelling - any interaction with those responsible for the training environment. Then, the material is uploaded on platforms that offer a series of simple teaching units to members, possibly organized in modules and accompanied by evaluation sheets of objective type, a glossary and spaces where you can practice (Bianchi, Quagliata, 2020).

L'e-teaching is often used for further training courses in the administrative field, distance university courses, individual training courses in ICT for computer literacy and is characterized by constant updating of teaching materials and the plurality of media used (texts, videos, images, audio references).

The ECOLHE project represents an opportunity to maintain the constant development of training systems as technological procedures useful for learning, but with a new focus on the "training process". In this sense, we want to underline that the current and imminent context is in the process of attracting all the actors involved to develop new e-learning processes.

1.9. Observing complex organizations. Universities between digital transformation and organizational change

An objective of ECOLHE's research activity is to observe the implications of the adoption of ICTs and digital innovation in different organizational processes of universities, not only in the learning and teaching process.

Organisational processes and systems in their internal configurations (processes, procedures, internal and external communication systems, learning paths and environments, educational interventions, etc.) they must

be rationalised in order to integrate and exploit digital technologies, with the aim of making them more flexible and effective (Capogna, Cianfriglia, Cocozza, 2020).

Universities can be observed and analysed as complex organizations which move in a global context. For this reason, at an international level it has become necessary to define criteria and quality indicators (E-xcellence, and Quality Matters) that allow guaranteeing the adequate development of the programs that use this training methodology. At an international level, such as, mention: EFQUEL and ENQA[16].

In the late thirties, Barnard (1938) introduced the concept of complex organizations, mainly referring to large organizations (large industrial companies, state administrations, commercial and financial companies, armed forces), which differ from small ones for the type, variety and twine of the **socio-technical relationships** that constitute them.

One of the most important factors that distinguishes and characterizes this type of organization is that, in order to manage organizational complexity, there are structures and people who perform different functions within them, both in terms of professional activities and tasks; the level of responsibility (hierarchy) they perform in the governance of the organization, or in the definition and management of decision-making, organizational and working processes. Therefore, there are structures which carry out operational activities (they must provide the product and/or service of the work organization), others that carry out managerial, coordination and programming and, finally, service, or support, activities in favour of both others.

An organization has no other existence than that of the people who make it live (Morgan, 2014). Weick (1997) proposes to read organizations through the concept of **sensemaking**: the construction of meaning, understood as a continuous process of conferring meaning on individual and social action. Therefore, the organization is not an external and pre-existing reality to human action, but an entity emerging precisely from a flow of actions that people themselves engage in. For Weick, people, with their behaviours, are not limited only to undergoing organizational environments, but they activate them, define them, identify them and, sometimes, demolish aspects of them.

Therefore, reflections on digital technologies cannot refer only to technological standardised procedures, but to action processes of individuals who learn and make learning possible in the organisation.

[16] European Foundation for Quality in e-Learning and European Dimention of Quality Assurance in Higher Education More information are available on https://www.eurashe.eu/about/partners/efquel/& https://enqa.eu/.

From a multidisciplinary perspective, without which the proposed theoretical research framework would be partial, incomplete, and not exhaustive, Ludwig Von Bertalanffy (1968) introduces three very useful concepts to clarify the characters of complex organizations:

- *Homeostasis*: the tendency towards a relatively stable equilibrium between interdependent elements, especially as maintained by physiological processes;
- *Requisite variety:* the internal regulatory mechanisms of a system must be as varied as the relative environment. So, any system that isolates itself from the diversity of the environment would tend to atrophy and lose its complexity;
- *Sistemic Evolution:* the ability to move to more complex forms of differentiation and integration, to foster the ability to face the challenges and opportunities offered by the environment.

With these - and other important - concepts, Von Bertalanffy has described the organizations as similar as "*living organisms"*.

In the last three decades, in the analysis of the evolution of organizations, the use of the concept of **complexity** and the one of **complex organization** has been of help to define that particular transformation of organizational models and their social systems affected by a qualitative as well as quantitative change. This paradigmatic evolution has affected and affects the life of all those organizations that produce goods and / or services, as well as public organizations (Cocozza, 2014).

Barnard (1938) explains that people decide to take collaborative actions within organizations, especially to try to reconcile needs of the organization with those of individuals. It is an attempt that can be made through the use of managerial management tools, which field fundamental variables: incentive and persuasion policies, to try to reconcile interests that would have divergent trajectories. The benefits of this type of action are not only material, but also moral: they lie in social and professional recognition, in a positive relational climate, in career opportunities.

To observe universities as complex organizations and carry out an analysis of the variables connected to three areas - organizational, teaching-learning (educational) and cultural area - it is useful to use the scheme for the analysis of the main organisational dimensions. Thanks to this scheme, it will be possible to identify for each case study the main interesting experiences in the field of:

- enhancing digital technologies in Higher Education institutions;
- academics professional development paths with a focus on digital innovation;

- quality assurance in Higher Education, with particular attention to digital innovation quality standards in teaching-learning processes;
- recognition and validation of teaching competencies, with particular attention to digital skills in Higher Education.

1.9.1. The analysis of the organizing activity

Organizing activity is one of the dimensions of the organizational phenomenon, based on which we can observe and study organizations.

To describe the organizing activity it is necessary to identify first

- the context within which it occurs;
- the dimensions that characterize it;
- the performance criteria;
- the objectives towards which it is oriented (Butera, 2009).

The context

The main context dimensions within the organizing activity takes place are the so-called 3T: technology, time and territory (Miller, 1959).

Starting from the in-depth analysis of Butera (2009) of the 3T, we try to pose the attention on the implications of these three dimensions and the adoption of digital technologies in Universities.

Technology consists of tools, machines, software that have the function of organizing and transforming things, information, and knowledge.

The constraint of time is associated with the idea of punctuality, synchronization, coordination. In contemporary society all activities are linked to time constraints: time control (speed and timeliness in obtaining results), working hours, balancing between private life and work life. They represent important constraints of the organizing activity.

The constraint of the territory is associated with the idea of locating activities in space:

- the need to identify a precise action space is linked to the activity which has to be carried out: distance, accessibility, physical ordering, positioning, location, distribution of actions in a place-office (factory, home, meeting places, supply routes);

- the need to optimize spaces in a single place is giving way to the idea of space not space. The shift from the choice of placing workers "all together in a large factory", typical of the taylor-fordism model, to the fluidity of borders announced by Bauman (2001) is becoming a typical feature of many forms of work.

ICTs development allows us to overcome spatial constraints, but it tends to unify, and often to confuse, work territories and life ones. For example, today in a PC used for work, there are different files of work and private life (photos and videos, personal emails and chats, film, music, the personal agenda) at the same time. Home has become increasingly the workplace and this tendency was already taking place before the Pandemic.

The question is how the digital transformation changes the relationship between Universities activities and the integrated use of ITCs, the redefinition of own space and time work? The question refers to learning processes, of course, but also to organizational processes, in which the first are integrated.

Dimensions of organizing activity

The organizing activity is characterized by four dimensions of organizing, the 4C (Butera, 1999): cooperation, communication, knowledge, and community.

They concern the person, the organizational unit, the institution, and the system.

Cooperation is the form in which many people work side by side, according to a plan, in the same work process or in a different, but connected, process or sub-processes.

Barnard (1938) was maybe the first author to understand that cooperation is the foundation of the organization and not vice versa. He refers to organizations as systems of cooperation that self-generate to guarantee organizational integrity and acceptable productive results. Butera (2009) defines this type of cooperation, which arises with industry, as extrinsic cooperation, to distinguish it from intrinsic or self-regulated cooperation. The latter, which has already appeared in some pre-industrial organizational forms and is now re-emerging in newly conceived organizations, implies that it is necessary to work together by developing shared action plans, among the members, which allow to decide together in whole or in part what to do, when, where and how to work.

It is a form of socialized cooperation, in content and form even when the objectives and general plans are set from above, from hierarchy. Participation of members is voluntary and continuous and requires continuous learning.

COMMUNICATION which takes place in organizations is increasingly based on the transmission of information, data, and images, realised face to face and more often with the support of digital tools.

Communicating is the human action aimed at transferring information, signs, symbols, meanings along channels and with various means from a broadcaster - which is usually an individual or collective subject that needs its

message to be understood and shared - to a recipient - which is usually an individual or collective subject who enriches his capacity if it acquires the message to process it according to his interests. In this perspective, communication is an individual meaning generated by and for interaction (Weick, 1969).

About KNOWLEDGE, as sharing, promotion and governance of different knowledge formats, it can be highlighted that there has traditionally been a contrast between objectified and reified knowledge (a technical procedure, a database, a patent which become property of the organization] and people's knowledge (captured and codified by traditional organizations).

The process of interaction between tacit knowledge and explicit knowledge generates learning, creating new meanings in the organisations. Today, a vision is affirmed, it encourages a synergy and a convergence of every kind of learning - formal, non-formal and informal -; new places, ways time of learning are developing, in the organisations and in relationships with their stakeholders. This is a complex process, which generates innovation, made of innovation (Nonaka, Takeuchi, 1995).

Therefore, organisational learning arises too (Argyris, Schön, 1979), as the process by which an organization improves itself over time through gaining experience and using that experience to create knowledge. The knowledge created is then transferred within the organization, in a continuous learning process, which can produce a double loop learning if the competence of learning to learn becomes common organizational assets.

Finally, the COMMUNITY implies a common feeling of participation, shared or positively mediated interests, significant objectives, partly common results, shared values.

Cooperation is the basis of a system in which values of individuals can be multiplied and can become organisation assets; but often spontaneous cooperation is not enough, it is necessary a management of the cooperative system, able to coordinate efforts, in a common vision.

The performance criteria

The organizing activity takes place with respect to performance criteria, useful to evaluate the action. If we take the two criteria of effectiveness and efficiency, we see how:

- effectiveness concerns the achievement of a goal;
- efficiency refers to the relationship between obtained results and incurred costs to achieve those results (resources, people, time, capital).

There is always a potential contrast between effectiveness and efficiency because things cannot always be done quickly and with low costs. In many cases, excess efficiency produces a drop in effectiveness, but more often effective but inefficient action causes a failure.

Most of the organizational approaches and methodologies tend towards this balance of performance, but it is not easy to reach this goal.

The types of objectives

The types of objectives of an organization are:

- technical objectives: linked to the effectiveness and efficiency of the process: producing products or services, optimally managing an educational service.
- economic objectives: these concern economic results: revenues, margins, value, etc.
- social objectives: concerns the quality of life of people, environmental sustainability, etc.

They are simultaneously present in different proportions.

All the above organisational activities can represent the main axes on which to evaluate organizational action; they are fundamental dimensions for action and for carrying out the organizational analysis.

How digital transformation has changed these dimensions and activities in Universities?

How has the adoption and integration of ICTs transformed the communication and cooperation processes? The way to share knowledge and to be community?

1.9.2. A procedural scheme of analysis of the complex organization

In this new scenario, as argued by Cocozza (2012), the ability to analyse the organizational structure and culture is fundamental, which should not belong to a small caste of super experts, but should be a common skill among everyone, managers responsible for structures, processes, technologies, and people. The performance of the organizational analysis requires a multidimensional theoretical approach, which directs a set of coordinated investigative activities, concerning the observation, measurement, and interpretation of a series of variables, which can be defined as tendentially critical, in almost all organizations (Cocozza, 2014). We mean those elements that can be subject to crisis (crisis: choice, decision), subject to continuous transformation and represent significant strategic variables to be monitored in the management of organizational processes, or also to favour effective management, but above all, a positive enhancement of human resources.

The structural dimension

The structural dimension of an organization includes all those aspects that define the internal and specific features that characterize its structure.

To effectively carry out a structural analysis, it is useful to take into consideration some strategic variables of an organisation (Cocozza, 2014):

- the constitutive purposes of the organization, the corporate mission, the main strategies adopted, the products and services provided.
- the activities necessary for the fulfilment of the corporate mission, its sub-division, the articulation of roles and structures of the organizational system.
- the foundations of the command and authority system, the degree of legitimacy by the main professional groups that make up the organization, the type of leadership exercised.
- the institutional and market environmental context in which the organization operates, the main characteristics of the economic and political system, stakeholders it interacts with, the demographic structure, the local socio-cultural system, the processes of social mobility, the structure and trend of the labour market.
- the main features of the legal system with which the organization interacts, in particular with reference to the national collective labour agreement applied and any company union agreements (second level).
- economic and financial objectives (institutional), productive and organizational ones.
- resources needed and those used to achieve the estimated results, divided into human, financial, technological, and instrumental.
- methods and procedures for recruiting and selecting personnel, the degree of "attraction" of the organization in the local labour market, the socialization, training, and training system.
- the characteristics of the labour mobility processes within the organization, and from the inside to the outside.
- the process of making decisions at different levels, the degree of planning and programming of the decisions, with reference to the different models of rationality.
- technologies used and their degree of pervasiveness in the primary processes (characteristic and distinctive), in those enabling (training) and support (such as administration, design, planning, programming); but also, the level of propensity for innovation, the system of coordination and control of production activity and that of hierarchical supervision;
- the historical, current and trend level, of effectiveness and efficiency, of adaptation (relationship between the demand for resources formulated by the organization and the demand expressed by markets or by the external environment), internal integration (degree of mutual adaptation between the different structures or units of the organization).

- processes of differentiation and external integration, in relation to the growth potential of the organization.

The cultural dimension of the organization

The analysis of the cultural dimension of the organization, integrating the previous one, examines the soft critical variables.

It allows a more in-depth understanding of some aspects that may remain less explored, considering only the hard variables.

Some of these variables may initially coincide, as even the analysis of the cultural dimension requires the collection and examination of some structural information, necessary to understand the organization.

Soft variables are:

- fundamentals of the command and authority system, their degree of formal and informal legitimacy by the various professional groups of the organization.
- the leadership model exercised.
- the role assigned to the participatory leadership model and to that for autonomy, the method adopted in the processes of involvement and participation of collaborators in production, organizational and decision-making processes.
- professional groups and their cultures, their role and influence exercised in the organization and their methods of interaction.
- communication processes, organizational communication, its level of articulation.
- the relational climate and organizational behaviour, cooperation and conflict processes.
- the relationship between leadership, policies and tools implemented for the enhancement of human resources.
- the role of organizational metaphors in the description of the organization.

The analysis of organizational roles

In each organisational role, generally, it is possible to distinguish two major areas of intervention: the executive one and the decision-making area, directly related to the hierarchical structure of the professional classification system.

The executive area contains the tasks to be performed, the procedures and rules to be respected to achieve a certain result.

The decision making area concerns the degree of autonomy and responsibility correlated with the results to be achieved can be seen.

In traditional organizational models, of mechanical or bureaucratic type, the prescriptive component is very pronounced in all organizational roles and it is directly proportional to the hierarchical position held in the organization.

In innovative organizational models, such as flat or networked organization, the discretionary component, connected with a good degree of autonomy and responsibility, is equally distributed among the different organizational roles.

The role of coordination mechanisms

Any organization needs to use adequate and effective coordination mechanisms, to be able to function and achieve results, to be able to positively integrate the structural and cultural dimensions. They are defined in accordance with the specific governance logic of the organization in question.

It is possible to analyse the adopted coordination mechanisms, using a classification, which starts from a verticalized approach and reaches an integrative and participatory dimension, as proposed by Mintzberg (1985):

- direct supervision;
- standardization of work processes;
- standardization of products;
- the standardization of capabilities;
- the mutual adaptation.

More traditional approaches, such as direct supervision, foresee:

- hierarchy;
- information conveyed from above;
- typical of simple or small organisations;
- standardization of work processes;
- mechanism based on the design and definition of all phases of the work process.
- formal rules represent the integration tool for different activities.
- limited operational autonomy.

More innovative approaches, such as the standardization of capabilities, foresee:

- a predetermination of skills which must be possessed to carry out activities.
- a based skills coordination.
- mutual adaptation.
- informal and direct communication between person and groups.
- no formal rules which mediate relationships.
- synchronously change of behaviours.

1.10. The ECOLHE research questions

A very interesting debate has developed over the last few years to understand the evolution of the teaching profession through the affirmation of liberal and democratic models (Biesta, 2016), which have contributed to erode the spaces of autonomy of teachers, leaving the need to emerge of new paths of recognition and legitimation (Stevenson, Gilliland, 2016).

The starting point of the reflection is the willingness to study the immaterial dimensions of the educational organization for exploring the building process of the professional habitus of the "digital teacher". The hypothesis is that the availability of the technological infrastructure is not *per se* enough to guarantee correct use of learning and knowledge technologies among colleagues, in the learner's group and with the learner group (Capogna, 2020). For such reasons, the research of ECOLHE has the objective to focus on the immaterial organizational aspects in the background.

The aim is that of understanding if, and how, the European and national digital patterns have been 'translated in practice" (Latour, 1999) in the examined countries, and how the digital innovation is sedimented in didactical practices that take part in the construction of an "organizational texture".

But not only in didactical practices, also in other organizational activities and dimensions, because all together make the "organizational texture".

Probably, today, it is not enough to observe and study the integration of ICTs in learning processes in HE, without taking into consideration how universities - as complex organizations - choose to act on this integration, how they govern it at the institutional level. Moreover, it is probably not possible to analyse this integration in the teaching and learning processes if it is not taken into consideration also in all the other organizational activities. Because just as the space between offline and online is perhaps overcome, so is the problem of integration in each separate organizational activity.

One of the most important issues affecting the development of the old and new media in education is the lack of a systemic vision of the different levels of education, and the lack of clear empirical data on the use both tools in teaching practices and in the definition of digital competences for all school staff (Capogna, 2020), even more for universities staff.

Two main dimensions seem to be relevant: the governance and the leadership of these innovation processes. Innovation does not concern only integration of ICTs, but how this integration changes the life - the ONLIFE - of the organisation, its processes, activities, ways of communicating and cooperating, sharing knowledge and competences. A good leadership is necessary. A manager does things right; has a focused vision; deals with how; aims for control; looks for stability and manages the present. A leader has a broad vision of the future and moves towards it; deals with what and why; thinks in terms of innovation and development (Bennis, 1999).

Cocozza (2012) underlines how in this evolutionary logic of tasks, activities and professional and, above all, relational competences, the new role of the school manager can be better defined as an educational leader. The educational leader is someone who does not believe he can direct his collaborators, in a logic of "triumphal march", but with a series of actions aimed at concentrating on removing obstacles, providing material and emotional support, taking care of the details which make the journey easier, sharing participation in the march and satisfaction at the end of the journey, identifying a meaningful destination for the next journey (Sergiovanni, 1992).

The object of the project is to understand how Universities - perceived and analysed as a complex organization - respond to:

- the pushes that come from above regarding the need to promote a culture and a widespread digital competence in a logic of inclusion and LifeLong Learning - through participatory leadership.
- the tension towards the standardization of processes in the framework of the construction of a European E-learning Higher Education based on common Quality Assurance standards.
- the pressures that come from below, from the digital revolution and the transformations it induces in the world of work and professions.

The issue is: how does the University of the 21st century – as an organizational space - fit into this complex framework?

A system, which learns (Levy, 1996), should no longer be considered as a stable reference point, but as a process; as an exchange between internal and external of the system, which tends to continuously revolutionize its structure. The systemic-constructivist epistemology guides us to consider education systems as "open" and

"autopoietic" systems (Bertalanffy, 1968) that present an interdependence between organization and environment. Starting from the *autopoietic* property, the education system learns from its own actions and, in its own autonomy, selects and elaborates among the environmental stimuli those it considers significant.

Finally, a reflection on the actual COVID-19 Pandemic.

It represented an unimaginable collective trauma.

In various countries of the world, it has shown the fragility of some systems, including health care, of course, but also social and educational ones. However, attempts have been made to respond with immediacy, effectiveness, and courageous resilience (of course, with light and shadows).

Now, it is perhaps more complicated to carry out research on the topics specified in ECOLHE, because we will continually have to ask ourselves what was before, what is now and what will be next.

What will the new normal be? Here, we want to refer only to the higher education system.

The plans that we will try to analyse during the research are different: one is institutional, one is organizational and, finally, didactic.

Perhaps, ECOLHE arises at a propitious, although difficult, moment. Because it is about observing and studying an ongoing transition. This is the time of transition. Typical elements of moments of transition are confusion, fragmentation, and dispersion.

In phases like these, research projects are placed as important and potentially significant opportunities for systematization for the collection and analysis of contextual information useful for understanding phenomena in progress.

Analysing and trying to understand profiles and contents of these phenomena can be functional to foreshadow what could come next.

Some of the critical issues, which could be observed right from the start in this pandemic year, were the multiplication of software's and platforms to use to continue to carry out one's research and teaching work; the enormous need for digital and soft, transversal-strategic, competences that emerged; risks of an immersive way of working and teaching, with increasingly difficulties in balancing work and lifetimes.

Our action is based on three pillars - time, space and material - which are lost in this phase, because we move immersivity in contexts that are becoming more and more timeless, non-spatial, non-material.

Is there also the risk of a deeper fragmentation of our identity? Is it possible that digitisation will lead to an atomization of identity, long-term? The body and its senses have been partially put on standby. What does this

entail in working relationships? What does this entail in teaching? To cope with all this, the need for an ever-stronger focus on one's personal identity has increasingly emerged.

In this framework, at organizational level (meso level) by the realization of 6 case studies the research explores the way in which Universities have transposed into organizational practices, provisions found in European documents with respect to the issue of:

- exploitation of ICT for LLL, in the framework of the Third Mission,
- quality standard, in particular, referred to online and blended learning for HE,
- teachers' professional development realized by the University.

The Units of analysis will be universities, to examine their micro-policies related to the way in which they have «translated into practice» digital challenge through:

- the promotion of digital resources in teaching activities (online and/or blended),
- teacher's professional development on digital transformation,
- e-learning quality standards,
- online/blended university policies.

The case studies will involve Italy, Spain, Ireland, Greece and Finland.

Then at didactic level, analysis will be focused on the main changes implemented and the next challenges.

The aim is to understand organizational processes in promoting digital innovation in universities to extract:

- orientations,
- best practices,
- standards and constraints.

The intent is to intercept useful suggestions for policymakers, decision-makers, and Academic Bodies in order to build an E- learning European HE Area.

References

Al-Kofahi, K. (2018). *All is bringing a new set of rules to knowledge work.* Thomson Reuters. Available on https://blogs.thomsonreuters.com/answerson/ai-knowledge-work/.

Ambra, M.C. & Pirro, F. (2017). Digitalizzazione e lavoro: nuove sfide per il social investment approach. *La Rivista delle Politiche Sociali*, n. 3, p. 79-94.

Bagnara, S. (2010). *Lavoro e sistemi formativi nella società della conoscenza*. Torino: Fondazione Agnelli. Working paper 4/2010.

Beck, U. (2016). *The Metamorphosis of the World*. Cambridge. UK: Polity Press.

Bertalanffy L. V., (1968), *General System Theory. Development, Applications.* New York: George Braziller.

Bianchi L., Quagliata A., (2020). Rethinking educational practice and online teaching at the time of Covid: transformations and unforeseen changes events in a university course. *QTimes*, Anno XII, n. 3: 163-184.

Billett, S. (2008). Emerging perspectives on workplace learning. In S. Billett, C. Harteis, & A. Etelapelto (Eds.), *Emerging perspectives on workplace learning.* Rotterdam: Sense Publishers.

Billett, S. In Lipari, D. & Pastore, S. (eds.) (2014). *Nuove parole della formazione*. Roma: Palinsesto. Pp. 287-295.

Butera, F. & Di Guardo, S. (2010). *Rappresentare e gestire il lavoro della conoscenza: un approccio per svelare e sviluppare broad profession*, Milano: Fondazione IRSO, Working Paper 3/2010.

Capogna S. (2016). Schools 2.0: experiences and expertise. Digital teachers wanted. *JISE*, 8(2): 54-67.

Capogna S., Cocozza A. & Cianfriglia L. (2018), *Le sfide della scuola nell'era digitale. Una ricerca sociologica sulle competenze digitali dei docenti*. Roma: Eurilink University Press.

Capogna S., Mustica S. (2016), *Insegnare e apprendere con le tecnologie: quale università.* In Capogna, S. Nirchi, S. (cur.). *Tra educazione e società nell'era delle ICT Luci e ombre del processo di innovazione digitale in ambito educativo*. Roma: Anicia. Pp. 131-148.

Capogna S., Sangrà A. (2016). E-learning quality standards. The case study of an online university. *Scuola Democratica* 7 (3): 731-752

Capogna, S. (2011a). University guidance services and support in the transition from education to work. *Italian Journal Of Sociology Of Education*, 1: 140-171.

Capogna, S. (2013). *A scuola di social media.* Roma: Aracne.

Capogna, S. (2014). *Scuola, Università, E-learning. Una lettura sociologica*. Roma: Armando.

Capogna, S. (2015). Tra fattori di rischio e ricerca della qualità nell'e-learning. In Calidoni, P. e Casula, C. (a cura di). *Learning Digital: which issues from education 2.0?* Cagliari: CUEC.

Capogna, S., (2011b). L'Università tra cambiamenti e resistenze. In Rauty, R. (a cura di). *Il sapere dei giovani*. Roma: Aracne.

Capogna, S., Cianfriglia, L., Cocozza, A. (cur.) (2020). *Digital Culture for Educational Organizations. Guidelines for Teachers and Education Agencies'*. Roma: Eurilink University Press.

Carayannis, E. G., & Campbell, D. F. J. (2009). Mode 3' and 'Quadruple Helix': toward a 21st century fractal innovation ecosystem. *International Journal of Technology Management* (IJTM), Vol. 46, No. 3/4, DOI: 10.1504/IJTM.2009.023374.

Casey, C. (2003). The learning worker, organizations and democracy. *International Journal of Lifelong Education*, 22 (6), 620–634. https://doi.org/10.1080/0260137032000138176.

CEDEFOP (2016). *Linee guida europee per la convalida dell'apprendimento non formale e informale.* Lussemburgo: Ufficio delle pubblicazioni dell'UE.

CEDEFOP (2018a). *Mapping the landscape of online job vacancies. Background country report*. Italy: Job Vacancy. Available at: https://www.cedefop.europa.eu/en/publications-and-resources/country-reports/mapping-landscape-online-job-vacancies-italy.

CEDEFOP (2018b). *Meno muscoli e più cervello per i lavoratori del futuro. Nota informativa. Giugno 2018.* Publications Office of the European Union. Available at: https://www.cedefop.europa.eu/en/publications-and-resources/publications/9130.

CEDEFOP (2019a). *Le competenze richieste dai datori di lavoro. Nota informativa. Aprile 2019.* Publications Office of the European Union. Available at: https://www.cedefop.europa.eu/en/publications-and-resources/publications/9137.

CEDEFOP (2019b). *The online job vacancy market in the EU. Driving forces and emerging trends*. Luxembourg: Publications Office of the European Union. Available at: https://www.cedefop.europa.eu/en/publications-and-resources/publications/5572.

Cocozza A. (2014). *Organizzazioni. Culture, modelli, governance*. Milano: Franco Angeli.

Cocozza, A. (2012). *Comunicazione d'impresa e gestione delle risorse umane. Valorizzare le persone nelle imprese innovative e nelle pubbliche amministrazioni virtuose*. Milano: Franco Angeli.

Cocozza, A. (2012). *Il sistema scuola, autonomia, sviluppo e responsabilità nel lifewide learning.* Milano: Franco Angeli

Conklina S., Oyarzun, B. & Barreto, D. (2017). *Blended synchronous learning environment: Student perspectives.* Research on Education and Media. North Carolina: SCIENDO. Pp. 17-23.

Dahrendorf R. (1999), *Squaring the circle: prosperity, civility and liberty*, in D. Avnon & De-Shalit A., eds., *Liberalism and its Practice*. London and New York: Routledge. Pp. 17-24.

Deloitte (2018), Introduzione. *L'ascesa dell'Impresa Sociale.* Global Human Capital Trends. Available on: https://www2.deloitte.com/us/en/human-capital-trends/2018/introduction.html.

Demasi D. (1992), *Processo a Taylor*. Milano: Olivares.

Departament D'educació. (2020), *Teachers' Digital Competence in Catalonia*. Catalogna: Educacio Gencat Cat. Available on: http://educacio.gencat.cat/web/.content/home/departament/publicacions/monografies/competencia-digital-docent/Competencia-digital_angles_web.pdf)

El-Mowafy A., Kuhn M. & Snow T. (2013), *Blended learning in higher education: Current and future challenges in surveying education, in Educational Research*. Australia: Curtin University.

Etzkowitz, H. & Leyedesdorf, L. (2000). The dynamics of innovation; from National Systems and "Mode 2" to a Triple Helix of university-industry-government relations. *Research Policy*, 29, 109-123.

European Commission (1995). *White paper on education and training. Teaching and learning towards the learning society.* Luxembourg: Publications Office of the European Union.

European Commission (2020). *JRC Service - Data and Digital Transformations*. Luxembourg: Publications Office of the European Union.

Floridi, L. (2007). A look into the future impact of ICT on our lives. *The Information Society: An International Journal*, 23(1), 59–64.

Floridi, L. (2013). *The ethics of information*. Oxford: Oxford University Press.

Floridi, L. (Ed.) (2014). *The Onlife manifesto. Being human in a hyperconnected era.* Oxford: Oxford University Press.

Frignani, P. (ed.). (2014). *Le Università per l'apprendimento permanente. Sviluppo, occupazione, territorio*. Lecce: Pensa Multimedia.

Giddens, A. (1990). *The Consequences of Modernity*. Cambridge: Polity Press.

Gilliland S., (2016) *Turn the Page: A Guide to Moving On and Letting Go*. Pennsylvania: Pearhouse Press.

Grazzini, E. (2008). *L'economia della conoscenza oltre il capitalismo. Crisi dei ceti medi e rivoluzione lunga*. Torino: Codice Edizioni.

Guitert, M. (coord.) (2014). *El docente en línia. Aprender colaborando*. Barcelona: Editorial UOC.

High Level Group on the Modernisation of Higher Education (2013). *Report to the European Commission on Improving the Quality of Teaching and Learning in Europe's higher education institutions.* Luxembourg: Publications Office of the European Union.

High Level Group on the Modernisation of Higher Education (2014). *Report to the European Commission on New Models of Learning and Teaching in Higher Education.* Luxembourg: Publications Office of the European Union.

International Labour Organisation (2019). *Work for a brighter future. Global commission on the future of work.* Geneva: International Labour Organization.

Jarvis, P. (2007). *Globalisation, lifelong learning and the learning society. (Vol. 2)*. London: Routledge.

Jarvis, P. (2012). *Teaching, Learning and Education in Late Modernity. The selected works of Peter Jarvis*. London: Routledge.

Johnson L., Becker S. A., Cummins M., Estrada V., Freeman A. & Hall C. (2016). *NMC Horizon Report: Higher Education Edition*. United States: New Media Consortium. Available at https://www.learntechlib.org.

Margiotta, U. & Raffaghelli, J. (2014). Transforming the Educational Relationship: steps for the Lifelong Learning society. *Formazione & Insegnamento XII, 2/2014*: 7-20.

Mathes, J. (2018). *Global Quality in Online, Open, Flexible and Technology Enhanced Education: An Analysis of Strengths, Weaknesses, Opportunities and Threats*. Oslo: ICDE.

Melnikova, J., Šimanskienė, L. & Župerkienė, E. (2020). Changes in university teachers' digital teaching competence as a response to COVID/19 emergence. *Q-Times*, Anno XII, n. 3: 239-250.

Miller, E. J. (1959). *Technology, Territory, and Time: The Internal Differentiation of Complex Production Systems. Human Relations. USA: Sage Journals Academic.* Available on https://doi.org/10.1177/001872675901200304.

Mohr, S.C., & Shelton, K. (2017). *Online faculty professional development framework.* Newburyport, MA: Online Learning Consortium. Available on https://onlinelearningconsortium.org/read/online-faculty-professional-developmentframework/.

Morgan G. (2014), *Images. Le metafore dell'organizzazione.* Milano: Franco Angeli

Morin, E. (2004). Prefazione. *Educare nell'era planetaria. In Bocchi, G., Ceruti, M. Educazione e globalizzazione.* Milano: Raffaello Cortina Editore.

Negrelli, S. (2013). *Le trasformazioni del lavoro*. Roma-Bari: Laterza.

Okaza A.A. (2015), *Integrating Blended Learning in Higher Education, IN Procedia - Social and Behavioral Sciences.* Amsterdam: Elsiever. Available at www.sciencedirect.com.

Ossiannilsson, E., Williams, K., Camilleri, A. F., & Brown, M. (2015). *Quality Models in Online and Open Education around the Globe: State of the Art and Recommendations.* Oslo: ICDE. Available on https://www.icde.org/assets/WHAT_WE_DO/icdequalitymodels22.pdf.

Palumbo M. & Startari S (2017). *How does the university consider competencies?,* EPALE. Journal on Adult Learning and Continuing Education, n.1: 6-2. Available on http://www.erasmusplus.it/adulti/epale-journal/.

Palumbo M., & Proietti E. (2019). Labour world and professional systems' transformations: new challenges for universities. *eucen Studies eJournal of University Lifelong Learning*, Vol 3 No 01, pp. 27-32. Roma: Electronic Press. Available on https://eucenstudies.eucen.eu/ejournal/aveiro-barcelona2019/.

Palumbo, M. & Proietti, E. (2018). Adult lifelong learning and counselling in life transitions: challenges for universities. *eucen Studies eJournal of University Lifelong Learning*, Vol 2 No 01, pp. 21-26. eucen Electronic Press. Available on https://eucenstudies.files.wordpress.com/2018/12/03_Prof-IT_PalumboProietti_ED.pdf.

Porter W., & Graham C.R., (2015). *Institutional drivers and barriers to faculty adoption of blended learning in higher education: Drivers and barriers to blended learning adoption, in British Journal of Education.* Amsterdam: Elsevier Ltd.

Porter W., Graham C.R., Bodily R. G. & Sandberg D.S. (2016). *A qualitative analysis of institutional drivers and barriers to blended learning adoption in higher education, on The internet and the Higher Education*. Amsterdam: Elsevier Ltd.

Porter W., Graham C.R., Spring K. A., & Welch K.R., (2014). *Blended learning in higher education: Institutional adoption and implementation, in Computer and Education.* Amsterdam: Elsevier Ltd.

Proietti, E. (2018). *L'individuazione e la validazione degli apprendimenti non formali e informali nel quadro del sistema di istruzione degli adulti in Italia. L'ePortfolio*. In Alessandrini, G. (a cura di). *Itinerari di ricerca dottorale in ambito pedagogico e sociale*. Lecce: Pensa Multimedia. Pp. 121-154.

Proietti, E. (2019). *La certificazione delle competenze tra istruzione, formazione, lavoro e orientamento.* Roma: QTimes Webmagazine, 1: 37-59. Available on: http://www.qtimes.it/.

Raetzsch, A., Glaumann M., Gonzalez A., Lee K., Song K., Lee K., Sabinus P. & Stok E., (2016), *The future of HE.* Boston: Little A.D. Available on: www.adl.com/Thefutureofhighereducation

Raggatt, P., Edwards, R., Small, N. (eds) (1995). *The Learning Society: Challenges and Trends*. London and New York: Routledge/Open University Press.

Sangrà A., Badia A., Cabrera AN., Espasa S., Fernández-Ferrer M., Guàrdia L., Guasch T., M. guitert, Maina M., & Raffaghelli R., Romero M., Romeu T., (2020). *Decálogo para la mejora De la docencia online propuestas para educar en contextos presenciales Discontinuos Prólogo de Teresa Guasch.* Barcelona: Editorial UOC. Available at: http://openaccess.uoc.edu/webapps/o2/bitstream/10609/122307/1/9788491807766_no_venal.pdf

Schön, D.A. (1983). *The reflective practitioner: how professionals think in action*. Aldershot, England: Ashgate.

Shantakumari, N., & Sajith, P. (2015). Blended Learning: The Student Viewpoint. *Annals of Medical and Health Sciences Research*, 5(5), 323–328. Available at: http://doi.org/10.4103/2141-9248.165248.

Simon, J. & Ess, C. (2015). The ONLIFE Initiative. A Concept Reengineering Exercise. *Philosophy and Technology*, 28 (1):157-162.

Singh, J.P. (2005). *Towards knowledge societies*. Paris: UNESCO.

Tuomi I., *Vesnic* Alujevic L., (2018), *Artificial Intelligence. A European Perspective.* Luxembourg: Publications Office of the European Union. Available on: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC113826/ai-flagship- report-online.pdf.

United Nations (2015). *Transforming Our World: The 2030 Agenda for Sustainable Development. Draft resolution referred to the United Nations summit for the adoption of the post-2015 development agenda by the General Assembly at its sixty-ninth session*. New York: Department of Economic and Social Affairs.

Weick K., (1969). *The social psychology of organizing*. New York: McGraw-Hill.

Wyn, J. (2014). Conceptualizing Transitions to Adulthood. In Davis C.A. & Olson J.S. (eds.). *New Directions for Adult and Continuing Education. Special issue: Meeting the Transitional Needs of Young Adult Learners, n. 143:* 5-16. DOI: https://doi.org/10.1002/ace.20100.

2. Empower Competences for Onlife Learning in HE. The European Framework of Higher Education in the digital era of Covid-19

Giovanni De Gennaro

Concetta Fonzo

Introduction

Europe is investing more and more in Education and Training policies, strategies, practices, and tools national and international wide. Nowadays, utilizing also the power of technology, the European commitment can bring unprecedented numbers of young and adult people together in meaningful facilitated learning contexts as part of their formal or non-formal education and training, including those people who have traditionally been disconnected from highly relevant knowledge, skill-building and transformative opportunities.

The European investments include a particular attention to Higher Education (HE) which has a strategic and relevant role in Lifelong Learning in order to succeed in the 21st century world and workforce. Higher Education plays a particular role in equipping young and adult people with both the knowledge and the skills, encompassed soft skills, offering opportunities in a knowledge-based and a more and more digitalized society and economy.

Based on this context, the present paper aims to provide an overview and a first input about the state-of-play of European policies and initiatives related to HE with a particular attention to the evolution, the progresses, and the developments of the Higher Education field in terms of digitalization, online as well as blended teaching and learning.

The focus will be also on the role of digital skills in relation to competences for life with the presentation of the main international frameworks for skills and competences development of learners and teachers.

The later are considered in relation to their functions connected to the further development of the HE fields and with regards to the quality assurance in teaching at all levels of education.

2.1. Overview on European policies and strategies impacting Higher Education.

In our knowledge-based society, academic learning, teaching and research can play a crucial role in relation to individual and societal development and innovation as well as in providing the highly specialised and qualified

human capital for more inclusive, green, and digital societies[17]. Therefore, the European Union considers Higher Education institutions crucial actors and adopted a strategy, the Europe 2020 strategy[18], setting as a specific target that by 2020 40% of young Europeans should have a Higher Education qualification.

The Europe 2020 strategy provided the basis for economic recovery of Europe towards 2020. It identified three main priority areas: smart (based on knowledge and innovation), sustainable (resource efficient) and inclusive (fostering a high-employment economy) growth. The strategy also set 5 main targets to be achieved:

- to raise the employment rate of the population aged 20-64 to 75%;
- to achieve a level of 3% of GDP invested in R&D;
- to reduce greenhouse gas emissions by at least 20% compared to 1990;
- to reduce the share of early school leavers to 10%;
- to help at least 20 million people leave out of poverty.

Realisation of the Europe 2020 strategy objectives and achieving its targets were the main goals of the European Union for the last decade. To organise the necessary actions, the European Commission has designed seven Flagship Initiatives where the European Union together with its Member States could concentrate their efforts. To foster progress under the HE and other objectives identified, in the last years, the European Commission proposes the following Flagship Initiatives:

- "Innovation Union";
- "Youth on the move";
- "A Digital Agenda for Europe";
- "Resource efficient Europe";
- "An industrial policy for the globalisation era";
- "An Agenda for new skills and jobs";
- "European Platform against Poverty".

[17] Communication on a European Skills Agenda for sustainable competitiveness, social fairness and resilience (2020): https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0274

[18] Europe 2020. A European strategy for smart, sustainable and inclusive growth: https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf.

In 2017, in line with the Europe 2020 strategy, the EU institutions and leaders announced a new package of initiatives build on the European Pillar of Social Rights[19]. The Pillar sets out 20 key principles and rights to support fair and well-functioning labour markets, structured around three chapters:

- equal opportunities and access to the labour market,
- fair working conditions,
- social protection and inclusion.

The Pillar is the first set of social rights proclaimed by EU institutions since the Charter of Fundamental Rights in the year 2000. To put the 20 rights and principles into practice, the Commission launched concrete initiatives at European level.

Following the European Pillar of Social Rights and its principles, on the 1st July 2020, the European Commission has presented the European Skills Agenda[20] for sustainable competitiveness, social fairness and resilience. The Skills Agenda aims to improve the relevance of skills in the EU to strengthen sustainable competitiveness, ensure social fairness and build resilience.

The European Skills Agenda is a five-year plan to help individuals and businesses develop more and better skills and to put them to use, by:

- strengthening sustainable competitiveness, as set out in the European Green Deal;
- ensuring social fairness, putting into practice the first principle of the European Pillar of Social Rights: access to education, training and lifelong learning for everybody, everywhere in the EU;
- building resilience to react to crises, based on the lessons learnt during the COVID-19 pandemic.

The new European Skills Agenda builds upon the ten actions of the Commission's 201621 Skills Agenda. It also links to the:

- European Digital Strategy,
- Industrial and Small and Medium Enterprise Strategy,
- Recovery Plan for Europe,

[19] The European Parliament, the Council and the Commission proclaimed the European Pillar of Social Rights at the Social Summit for Fair Jobs and Growth in Gothenburg (Sweden), on 17 November 2017, https://ec.europa.eu/commission/sites/beta-political/files/social-summit-european-pillar-social-rights-booklet_en.pdf.

[20] Communication on a European Skills Agenda for sustainable competitiveness, social fairness and resilience (2020): https://ec.europa.eu/social/BlobServlet?docId=22832&langId=en.

[21] A new skills agenda for Europe: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0381&from=EN

- Increased support for youth employment.

The European Skills Agenda includes 12 actions organized around four building blocks:

A call to join forces in a collective action which includes:

Action 1: A Pact for Skills.

Actions to ensure that people have the right skills for jobs which include:

Action 2: Strengthening skills intelligence,

Action 3: EU support for strategic national upskilling action,

Action 4: Proposal for a Council Recommendation on vocational education and training (VET),

Action 5: Rolling out the European Universities Initiative and upskilling scientists,

Action 6: Skills to support the twin transitions,

Action 7: Increasing STEM graduates and fostering entrepreneurial and transversal skills,

Action 8: Skills for life.

Tools and initiatives to support people in their lifelong learning pathways which include:

Action 9: Initiative on individual learning accounts,

Action 10: A European approach to micro-credentials,

Action 11: New Europass platform,

And a framework to unlock investments in skills which includes:

Action 12: Improving the enabling framework to unlock Member States' and private investments in skills.

As part of its new skills policy, the European Commission has set ambitious objectives for the next 5 years. They are based on existing indicators, which will allow to monitor progress yearly through the European Semester. In particular, the European Skills Agenda sets objectives to be achieved by 2025[22], based on well-established quantitative indicators, as described in the following table:

[22] Commission presents European Skills Agenda for sustainable competitiveness, social fairness and resilience: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1196

Tab. 1: Objectives for 2025

Indicators	Objectives for 2025	Current level (latest year available)	Increase (in %)
Participation of adults aged 25-64 in learning over a period of 12 months	50%	38% (2016)	+ 32%
Participation of low-qualified adults aged 25-64 in learning over a period of 12 months	30%	18% (2016)	+ 67%
Share of unemployed adults 25-64 with a recent learning experience	20%	11% (2019)	+ 82%
Share of adults 16-74 having at least basic digital skills	70%	56% (2019)	+ 25%

Source: European Commission

The European Skills Agenda sets ambitious, quantitative objectives for upskilling (improving existing skills) and reskilling (training in new skills) to be achieved within the next 5 years. Its 12 actions focus on skills for jobs by partnering up with Member States, companies, and social partners to work together for change, by empowering people to embark on lifelong learning, and by using the EU budget as a catalyst to unlock public and private investment in people's skills. The main aim of the EU Skills Agenda is to ensure that the right to education and lifelong learning, enshrined in the European Pillar of Social rights, becomes a reality all over Europe, starting from cities to remote and rural areas, to the benefit of everyone.

In synthesis, "Europe is placing skills at the heart of the EU policy agenda, steering investment in people and their skills for a sustainable recovery after the coronavirus pandemic. Businesses need workers with the skills required to master the green and digital transitions, and people need to be able to get the right education and training to thrive in life. The green and digital transitions as accompanied by demographic trends are transforming how we live, work and interact. We want to ensure people have the skills they need to thrive. The coronavirus pandemic has accelerated these transitions and brought new career challenges for many people in Europe. In the aftermath of the crisis, many Europeans will need to retrain in a new skill or improve their existing skills to adapt to the changed labour market".[23]

[23] Commission presents European Skills Agenda for sustainable competitiveness, social fairness and resilience: https://ec.europa.eu/social/main.jsp?langId=en&catId=89&furtherNews=yes&newsId=9723 (Accessed 15 december 2020).

To implement the actions and meet the objectives of the Skills Agenda, the EU will need to also invest a lot in Higher Education. EU Higher Education systems and providers can act as a catalyst for investing in people's knowledge and skills. In the context of the European Skills Agenda, unprecedented digital resources, for learning and teaching, can be proposed by universities to support a sustainable transition to the digital and green, and investment in skills should be at the heart of these efforts. In other words: "Higher education is an essential vehicle to provide students with the skills they need in the future. Universities generate the advanced knowledge and skills that help society innovate to address its big challenges. They are empowering people with high-level skills that allow them to boost their professional, social and personal development. The fast-changing labour market and societal transitions require a transformation of tertiary education institutions and to improve their alignment with the economic environment to ensure that graduates have the education and skills required by the labour market and especially those that are needed for the twin transitions".[24]

Moreover, as stated in the Commission's white paper on the future of Europe (European Commission, 2017), building a better future for European citizens is a fundamental element for the success of the European project, also confirmed by the references to the same objective in other documents such as "Investing in youth 'Europe" (European Commission, 2016), and the new skills agenda for Europe. In each of these documents, the importance of having effective education systems, including Higher Education systems, capable of guaranteeing a fair, open and democratic society, which allows for sustained growth, where a sufficient number of jobs are guaranteed, emerges. Furthermore, in the EU initiative "European Pillar of Social Rights"[25], education and skills development are among the priorities for European cooperation. Again, in such a context, higher education has a very prominent role, especially in anticipation of the demand for new highly specialized professionals that will be required between now and 2025.

In conclusion, despite the National Authorities in each Member State remain responsible for the way Higher Education is organised and delivered in their countries, at European level, European institutions bring an additional international dimension to studying, teaching, researching, or making policy in higher education all over Europe. In particular, the European Commission, jointly with the main European and national, as well as regional and local stakeholders, is working with policymakers and decision makers to support the development of the European Higher Education Area (EHEA), with all its policies and strategies in EU countries. In fact, the

[24] European skills agenda for sustainable competitiveness, social fairness and resilience, pag.11: https://ec.europa.eu/social/BlobServlet?docId=22832&langId=en

[25] The European Parliament, the Council and the Commission proclaimed the European Pillar of Social Rights at the Social Summit for Fair Jobs and Growth in Gothenburg (Sweden), on 17 November 2017, https://ec.europa.eu/commission/sites/beta-political/files/social-summit-european-pillar-social-rights-booklet_en.pdf

President of the European Commission Von Der Leyen, following the fundamental principles of the EU and recognizing the importance of education for personal fulfilment, employability and the exercise of active and responsible citizenship, is committed to achieving by 2025 the European Education Area. The right to quality and inclusive education, training and lifelong learning are fundamental elements for redefining the Union's growth strategy, based on sustainability and green and digital transitions.

Finally, on 30th September 2020, the European Commission unveiled also its plans for three long-awaited strategic proposals: 1) the Digital Education Action Plan (2021-2027); 2) the European Research Area; 3) and the European Education Area to be achieved by 2025. These three communications outline a number of actions for the next five years where the new wide-ranging vision for European education and training is also an acknowledgement of the key role that HE plays to Europe's social, digital and sustainable future.

Looking outside Europe, relevant inputs to the new European Skills Agenda and consequently to the European Higher Education Area come also from the United Nations and its 2030 (Agenda United Nations, 2015).

In fact, among the 17 Sustainable Development Goals of the 2030 Agenda signed by the member countries of the United Nations, the 4th point identifies the need to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, to create a solid foundation to improve people's lives and achieve sustainable development. The Council of the EU welcomes the agenda and encourages Member States to raise the level of ambition of their national responses and to proactively integrate the 2030 Agenda into national planning tools, policies, strategies, and financial frameworks. To facilitate the achievement of the objectives, the EU defines a series of actions in support of the specific objectives. In particular, for objective 4, it identifies a series of targets and adopts a series of initiatives to enable Member Countries to reach them by 2030. The objectives set have in common the fundamental principles of the Union, such as gender equality, inclusion for all social levels and people with disabilities, the promotion of multiculturalism and non-violence. Regarding education and training, the stated objectives are:

- the improvement of education at all levels: pre-primary, primary and secondary which must be free, fair and of quality and must adequately prepare boys and girls for subsequent levels of study.
- Access to affordable and quality technical, vocational and tertiary education should be available to all, including universities.
- increase the skills (hard and soft) of young people and adults at a qualitative and quantitative level, for employment, decent work and entrepreneurship.

- Ensure an adequate level of literacy and mathematics for all young people and a considerable percentage of adults.
- To guarantee all students the acquisition and development of adequate skills to promote sustainable development.
- Spread the culture of non-violence, gender equality, human rights, global citizenship and the acceptance of cultural diversity.
- Quantitatively and qualitatively, increase the supply of qualified teachers, including through international cooperation for teacher training in less developed countries, developing countries and small island states.
- Increase globally (by 2020) the number of scholarships available to people from least developed or developing countries for enrollment in higher education, including vocational training and information technologies, and communications, technical, science and engineering programs[26].

2.2. What is the European Union doing to boost the European Higher Education Area?

The Higher Education Area across Europe has changed a lot in the last decades. The European Higher Education Area (EHEA) was launched in March 2010, during the Budapest-Vienna Ministerial Conference, on the 10th anniversary of the Bologna Process. As a follow-up of the main objective of the Bologna Process since its establishment in 1999, the EHEA aims to ensure more comparable, compatible and coherent higher education systems in Europe.

Between 1999 and 2010, the Bologna Process members put many efforts to creating the European Higher Education Area, which became reality with the Budapest-Vienna Declaration of March 2010.

So, the Joint Declaration of the European Ministers of Education convened in Bologna on 19 June 1999, called also the Bologna Declaration (EHEA, 1999), adopted by ministers of education of 29 European countries, is the guiding document of the Bologna process but also the foundation stone of the EHEA. The main goal of the Bologna Process was to bring more coherence to higher education systems across Europe. Therefore, the establishment of the European Higher Education Area aimed to reach the following objectives: to facilitate student and staff mobility, to make higher education more inclusive and accessible, and to make higher education in Europe more attractive and competitive worldwide. Participating in the European Higher Education Area, all Member Countries agreed to:

- introduce a three-cycle higher education system consisting of bachelor's, master's and doctoral studies,

[26] https://ec.europa.eu/sustainable-development/goal4_en

- ensure the mutual recognition of qualifications and learning periods abroad completed at other universities,
- implement a system of quality assurance, to strengthen the quality and relevance of learning and teaching.

And, based on the last point, in the European HE context started a particular focus on enhancing the quality and relevance of learning and teaching, as core mission of the Bologna Process. In other words, the Bologna Process, starting with the Sorbonne and Bologna Declarations, was the response of national governments to the challenges arising from the European Higher Education area and provided a space for discussion on common challenges and developments.

After the Bologna declaration, a lot of progress has been made in reforming higher education systems in EU Member States and beyond, as reported by all the EU meetings and documents produced from 1999 to 2020. In fact, the Bologna declaration has been followed up a series of meetings between EU ministers and each meeting has produced a communiqué based on their deliberations.

At the same time, at the Gothenburg Social Summit (European Commission, Government offices of Sweden, 2017), in 2017 the European Commission stressed the role of education and culture as fundamental elements to develop a more inclusive, cohesive and competitive Europe and identified also the objectives for 2025 of a European Education Area[27]. Launched during the Gothenburg Summit, a new vision of higher education institutions led by European leaders outlines a paradigm shift for education and culture, in general.

The Gothenburg summit reaffirmed the anthropocentric vision of the EU and identified the path to follow to develop the social dimension of the European Union through the shared commitment of the various member countries and the consolidation of skills. The points identified are the following:

- - implementing the principles and rights set out in the European Pillar of Social Rights, notably through the European Semester of Policy Coordination and in the Member States' 2018 National Reform Programmes;
- - facilitating a well-functioning social dialogue at all levels, including the 'new start for social dialogue' at EU level;
- - progressing swiftly on pending social files at EU level, including on Posting of Workers, Social Security Coordination, Work–Life Balance and the European Accessibility Act, as well as being ready to swiftly examine future initiatives announced by the Commission in its Work Programme for 2018;
- - following up on the priorities of the EU Action Plan 2018–2019 to tackle the gender pay gap;

[27] European Education Area: https://ec.europa.eu/education/education-in-the-eu/european-education-area_en

- - and, delivering further on the new European Skills Agenda, with a particular focus in 2018 on implementing the Council Recommendation on Upskilling Pathways[28], intended for people with the most skills needs (European Commission, Government offices of Sweden, 2017, pag.2).

In the last 10 years, Europe has seen a significant increase in the level of tertiary education, from 31.1% (population aged 30 - 34 who held a university degree in the EU), to 40.3%, reaching the target ET 2020[29]. However, despite the focus on forms of inclusive policy, the data contained in the Eurostudent report and the data relating to the implementation of the Bologna process, still show an uneven representation of students from disadvantaged backgrounds in HE.

Another problem that emerged in HE is the 10-point gap (with a tendency to increase) percentages in the tertiary education rate between men and women, in favour of the latter.

To deal with the problems caused by the COVID-19 pandemic in HE, the process of transformation of higher education that has already begun has accelerated dramatically across Europe, impacting on specific areas of higher education, such as digitization and equal access to digital infrastructures, the identification of innovative pedagogies and student-centred learning, inclusion, funding, the support to be provided to students and staff of institutions and mobility which has been significantly reduced. Furthermore, the Covid-19 crisis has highlighted the need for greater transnational cooperation between universities to ensure the adequate level of quality of HE throughout the European territory, since, although international cooperation is part of each university, they are still strongly linked to their country's policies and legislation.

Back to the Bologna Process and the EHEA, in line with the Education and Training 2020 strategy (ET2020)[30] and the renewed EU agenda for higher education (European Commission 2017), adopted by the European Commission in May 2017, Europe identified also four key areas for the European cooperation in higher education:

1. Tackling future skills mismatches and promoting excellence in skills development: direct a sufficient number of students to the subjects they prepare for the professions required by the market; guide and motivate

[28] Upskilling Pathways: New Opportunities for Adults: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOC_2016_484_R_0001.

[29] European policy cooperation (ET 2020 framework): https://ec.europa.eu/education/policies/european-policy-cooperation/et2020-framework_en

[30] European policy cooperation (ET 2020 framework): https://ec.europa.eu/education/policies/european-policy-cooperation/et2020-framework_en

young people in the study of certain subjects that can direct future studies; offer well-designed curricula for higher education; activate projects and programs aimed at training excellent teachers.

2. Building inclusive and connected higher education systems: foster systematic cooperation between higher education institutions, schools and VET providers, to facilitate student preparation; foster dialogue between higher education and surrounding society, to develop civic and social skills in students.
3. Ensuring higher education institutions contribute to innovation: involve higher education in innovation processes, so that they can make their fundamental contribution.
4. Supporting effective and efficient higher education systems: define the objectives and quality standards of higher education.

Among the various initiatives of the European Commission is also the creation of a knowledge hub for higher education, linking the European tertiary education register (ETER), the U-Multiranke classification and the pilot phase for monitoring pathways career of graduates. Furthermore, the European Commission strengthened the work of the Eurydice network and the cooperation with OECD.

Moreover, with the aim to achieve the above-mentioned goals, the European Commission introduced specific actions at EU-level, as for example:

- the exchange of good policy practices between different countries through the ET2020 higher education working group;
- the Bologna Process, designed to promote the internationalisation of higher education in Europe, through more mobility, easier recognition of qualifications and streamlined quality assurance mechanisms;
- the development and use of mobility and recognition tools, such as the ECTS system and the Diploma Supplement, to increase transparency and facility exchanges in Europe.

In its December 2017 conclusions, the European Council called on Member States, the Council and the Commission to take forward a number of initiatives.

More recently, in the context of the European Education Area, the European Commission also launched the following initiatives:

- the Networks of European Universities that brings a major change to higher education practices, through integrated curricula and mobility, thus fostering quality, excellence, and innovation.
- a Council recommendation on automatic mutual recognition of higher education and school-leaving diplomas that helps to remove barriers to student mobility within Europe.

- the European Student Card that will facilitate the secure exchange of student information and reduce administrative burden for higher education institutions, serving as a concrete example of the emerging European Education Area.

In May 2018, twenty years after the Sorbonne meeting, the EU ministers of higher education from 48 countries returned to meet in Paris[31]. The occasion allowed them to analyse the results obtained in the EHEA after the Sorbonne and Bologna declarations. Noting the important achievements, they underlined the importance of Higher Education systems in finding and suggesting solutions to address important social challenges such as unemployment, social inequality, immigration, increasing political polarization, radicalization, and violent extremism.

In addition, HE was called upon to provide students with the tools necessary to ensure adequate opportunities for personal development throughout their lives. In fact, as demonstrated over the years, students who finish their higher education path have greater employment prospects and develop greater awareness in exercising active citizenship in democratic societies. The ministers, in the final document, called Paris Communiqué, pledged to further develop student mobility, and, through the EHEA, to create the conditions for higher education qualifications to be aligned in all acceding countries, to facilitate access to further education cycles and the labour market. The commitment was realized with the intention of fully implementing ECTS, through the guidelines for users established in 2015 and adopting transparent procedures to recognize the periods of study done with the support of digital solutions. Furthermore, the revision of the Diploma Supplement was approved (also favouring the digitization of the document) which must have identical versions of the various frameworks of the Lisbon and Europass Recognition Convention. To support and strengthen cooperation and quality within the EHEA, three specific commitments were defined:

- a three-cycle system compatible with the general qualifications framework of the EHEA and of the first and second cycles, adapted by the ECTS system,
- compliance with the Lisbon Recognition Convention,
- quality assurance must comply with the "Standards and guidelines for quality assurance" in the European higher education area.

And to be successful in the above areas:

- cooperation was further encouraged through the Erasmus + Programme,

[31] www.ehea2018.paris

- new and inclusive approaches were developed to improve learning and teaching through the EHEA,
- European initiatives were developed to support innovative good learning and teaching practices existing in Member Countries,
- the centrality of student learning and open education in the context of lifelong learning was reaffirmed,
- Higher education institutions were supported in the development and improvement of their learning and teaching strategies, especially in the definition of interdisciplinary programs and in the relationship between academic learning and on-the-job learning,
- Higher education institutions were invited to prepare students and teachers to interact through a digital environment,
- Higher education institutions were activated to ensure a sustainable future for the planet and to foster social dialogue through which EHEA ministers can contribute to achieving the United Nations Sustainable Development Goals at all levels,
- the UNESCO World Convention on the Recognition of Higher Education Qualifications was welcomed.

In November 2020, took place the EHEA Rome 2020 Ministerial Conference as an opportunity to reinforce cooperation between countries for a better future in higher education, to increase the number of countries participating in the EHEA with the entry of San Marino in the process and to reflect on the next decade of the EHEA. This last Ministerial Conference of the Bologna Process held online, due to the Covid-19 pandemic, produced an extensive exchange and share on future commitments in the HE area in Europe. In detail, the Rome Communiqué includes the commitment to building an inclusive, innovative and interconnected EHEA by 2030, able to underpin a sustainable, cohesive and peaceful Europe:

- inclusive, because every learner will have equitable access to higher education and will be fully supported in completing their studies and training;
- innovative, because it will introduce new and better aligned learning, teaching and assessment methods and practices, closely linked to research;
- interconnected, because our shared frameworks and tools will continue to facilitate and enhance international cooperation and reform, exchange of knowledge and mobility of staff and students (Rome Communiqué, 2020[32]).

[32] Rome Communiqué, 2020: https://ehea2020rome.it/storage/uploads/5d29d1cd-4616-4dfe-a2af-29140a02ec09/BFUG_Final_Draft_Rome_Communique-link.pdf

The vision of an inclusive, innovative and interconnected EHEA by 2030 is in particular focused on the transition to digital and digitalization that is synthesised within the EU commitment:

"to supporting our higher education institutions in using digital technologies for learning, teaching and assessment, as well as for academic communication and research, and to investing in the development of digital skills and competences for all". And, finally, European decision makers "commit to the development of open science and education to facilitate the exchange of knowledge and openly licensed materials that can be easily shared among higher education stakeholders, who can adapt and repurpose them for their needs" (Rome Communiqué, 2020, pag.6).

2.3. The European Higher Education Area: teaching and learning in the future.

The Covid-19 pandemic has resulted in a strong acceleration of the digitization process of education and training systems in Europe, proposing profound changes in the ways of learning, teaching, and communicating. The EU, following up on the strategic framework for European cooperation in training and education (ET2020), has budgeted, more and more, for the creation of a European area for education for 2021-2027[33], through interventions involving the HE sectors, including research, adult education, and non-formal learning.

A new agenda restarts with the ET2020 objectives, which have all been achieved except for the target to reduce the share of 15-year-olds achieving low levels of reading, math and science to less than 15% by 2020.

The new strategic agenda for Europe 2019-2024[34] adopted by the European Council on 20 June 2019 urges Member States to increase investment in people's skills and education. The establishment of a European Education Area will be directly linked with the European Skills Agenda, VET policies and the European Research Area to harness knowledge as a cornerstone for a prosperous, principles-based Europe of inclusion, mobility and innovation. To reach the target, the Commission proposes to consolidate ongoing efforts and further develop the European Education Area along six dimensions[35]:

2.3.1. Quality

Promote quality education that can guarantee young people:

- mastery of basic skills, including digital skills,

[33] Digital education plan 2021 – 2027. Resetting education and training for the digital age: https://ec.europa.eu/education/sites/education/files/document-library-docs/deap-communication-sept2020_en.pdf
[34] A new strategic agenda 2019 – 2024: https://www.consilium.europa.eu/media/39914/a-new-strategic-agenda-2019-2024.pdf
[35] On achieving the European Education Area by 2025: https://ec.europa.eu/education/sites/default/files/document-library-docs/eea-communication-sept2020_en.pdf

- mastering transversal skills such as critical thinking, entrepreneurship, creativity and civic engagement through transdisciplinary, learner-centered and challenge-based approaches,
- promote student and teacher mobility and cooperation between European education institutions,
- promote language learning and multilingualism,
- support teachers in managing linguistic and cultural diversity,
- promote a pro-European vision in students,
- maintain education and training institutions as safe environments, free from violence, bullying, harmful language, misinformation and all forms of discrimination[36].

2.3.2. Inclusion and gender equality

Education currently fails to reduce inequalities linked to socio-economic status, in Europe the number of young people from disadvantaged backgrounds is still high. Poor literacy performance and school dropout rates are higher among boys than girls, particularly in rural areas the data deteriorates. The importance of inclusion and equity in education, especially in relation to the geographical area of belonging of students and families, has been made even more evident by the Covid-19 pandemic. Furthermore, although women have a higher education rate and lower dropout rates on average than men, they are less represented than men in some scientific fields of study and have difficulty accessing better-paid jobs. The European area intends to intervene to:

- separate academic achievement from social, economic and cultural status and foster the educational needs of pupils with high learning potential in an inclusive way,
- make education systems compliant with the United Nations Convention on the Rights of Persons with Disabilities,
- making VET systems agile, resilient and future-proof, in line with the Commission proposal for a Council Recommendation on VET,
- define solid and inclusive lifelong learning strategies to also encourage the return to training of those who have left education prematurely,

[36] On achieving the European Education Area by 2025: https://ec.europa.eu/education/sites/default/files/document-library-docs/eea-communication-sept2020_en.pdf pag. 6.

- cross-border cooperation should be strengthened, in youth work, as well as in the domains of sport and culture, to promote non-formal learning including their link to formal education[37],
- develop a better gender sensitivity in educational processes and institutions, fostering a culture capable of effectively combating sexist behaviours and sexual harassment,
- fighting gender stereotypes, especially those that limit access to certain professions,
- promote gender balance in leadership positions also in higher education institutions.

2.3.3. Green and digital transitions

To ensure a prosperous future, the EU has decided to intervene, through policies and investments, on training and education oriented towards green and inclusive digital transitions, to facilitate the transition towards an economy that is environmentally sustainable, circular and climatically neutral. In fact, only with education and the acquisition of skills aimed at promoting the transition to a greener and more digital world, it will be possible to have significant social and employment impacts and Europe will be able to acquire global leadership. The aim is to foster transformation in:

- Education systems and institutions that need to start "capacity building" for the green economy, as well as promoting new sustainable infrastructure for education and training and renovating existing buildings, thereby creating conducive environments for this change.
- education and training so that there are professionals capable of defining and managing a climate-neutral and resource-efficient economy,
- effectively supporting sustainability transitions by integrating environmental sustainability perspectives between the natural and human sciences and supporting changes in skills, methods, processes and cultures[38],
- promote the acquisition and development of digital and entrepreneurial skills and above all develop the ability to learn to learn in order to deal with a new labour market characterized by technological innovation.

2.3.4. Teachers and trainers

Within the European area of education and training, the figure of the educator plays an important role. In fact, the preparation of future professionals able to relate to an increasingly complex and dynamic labour market is

[37] On achieving the European Education Area by 2025: https://ec.europa.eu/education/sites/default/files/document-library-docs/eea-communication-sept2020_en.pdf pag. 7.
[38] On achieving the European Education Area by 2025: https://ec.europa.eu/education/sites/default/files/document-library-docs/eea-communication-sept2020_en.pdf pag. 9.

linked to highly competent, enthusiastic, and committed teachers and trainers. For this reason, it is of fundamental importance to re-evaluate the teaching profession, through the overcoming of the shortage, the generational change and the preparation (which must necessarily develop adequate digital skills) of teachers. Furthermore, "the international mobility of students, teachers and teacher trainers should become part of teacher training to broaden access to the diversity of quality teaching approaches to meet the needs of pupils."[39]

2.3.5. Higher education

The Covid-19 pandemic has highlighted on the one hand the ability to adapt to changes in the higher education sector, on the other hand the crisis has intensified the challenges regarding digitalisation, innovative pedagogies, inclusion and well-being, students, researchers and staff support, mobility and funding. Although the Bologna Process has launched a process of internalization and mobility for students and teachers in the EU territory and cooperation between different European academic institutions, the need emerges for European higher education systems to:

- enhance cooperation through the definition of common curricula to foster greater movement of students between education systems in different countries, including in cutting-edge science disciplines,
- define <<a policy framework across borders that allows for seamless transnational cooperation, which will enable alliances of higher education institutions to leverage their strengths, pooling together their online and physical resources, courses, expertise, data and infrastructure across disciplines>>[40],
- automatic recognition of academic qualifications and periods of study abroad,
- define specialized education programs in advanced digital skills such as artificial intelligence, cybersecurity, and high-performance computing, to respond to the increasing demand of the labour market for highly specialized profiles.

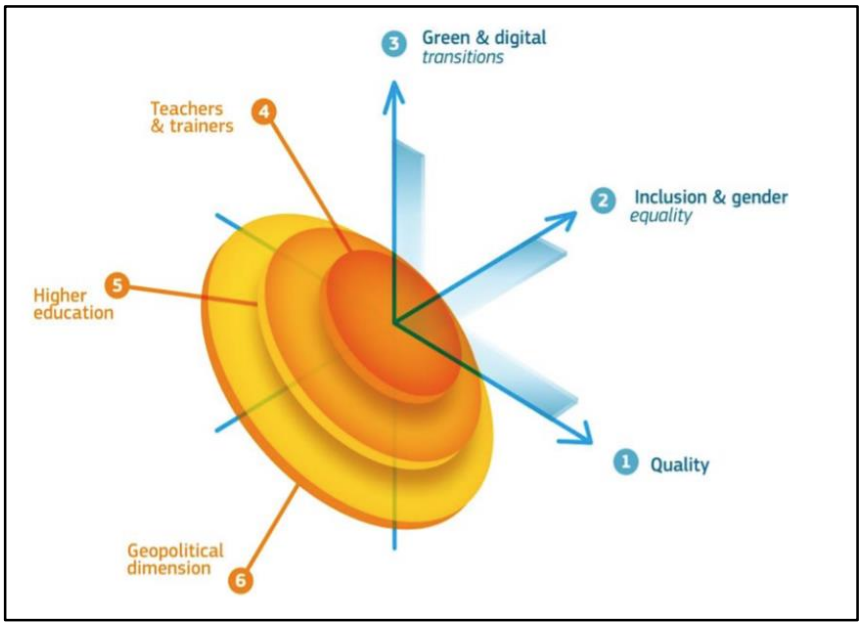
2.3.6. Geopolitical dimension

Over the years, the EU has strengthened international cooperation in the field of education, as it is considered an indispensable tool of soft power and, above all, to raise the level of quality in view of the increasingly demanding global challenges for achieving the geopolitical priorities of the European Union and the 2030 Sustainable Development Goals. Student mobility, even outside the EU, in tertiary education, presents

[39] On achieving the European Education Area by 2025: https://ec.europa.eu/education/sites/default/files/document-library-docs/eea-communication-sept2020_en.pdf pag. 10.
[40] On achieving the European Education Area by 2025: https://ec.europa.eu/education/sites/default/files/document-library-docs/eea-communication-sept2020_en.pdf pag. 10.

interesting data, but in the VET sector and the sector of youth it is struggling to start. As mentioned above, tertiary education has a great responsibility, as it must shape the thinking of the next generation of leaders and entrepreneurs in partner countries around the world and for this it is necessary to adopt policies that can foster intercultural exchanges between students and tertiary education staff. Favoured by EU policies, many young people from countries outside the EU arrive in Europe every year. The Erasmus + Programme has made it possible to consolidate the links between the European Education Area and the rest of the world. Furthermore, international partnerships have fostered the development of study programs and promoted joint research and innovation projects. Similarly, capacity-building actions have been instrumental for the internationalization of higher education systems in partner countries, hereby supporting socio-economic reform and democratic consolidation. The European Education Area aims to make the European HE increasingly attractive and to foster and consolidate data on the arrivals of students from non-EU countries by 2025, as well.

Fig. 7 - The six dimensions of the European Education Area



Source: European Commission, 2020

Within the above-described context, online learning and teaching has a relevant, strategic, and challenging role to play, in particular looking at the current difficult world pandemic times. After the first period of COVID-19 crisis, Countries are reopening schools and universities, but the health emergency persists and restrictions may remain in place, impacting on the organization of class lessons, and in presence teaching and learning. One approach under discussion is blended learning - a combination of in-class and distance learning.

So, avoiding returning fully to the way education was designed and functioning before, the COVID-19 pandemic has also presented systems with an opportunity to positively embrace a paradigm shift that has long been happening, albeit slowly.

Higher Education, in primes, is exploring how the "traditional" ways of organizing teaching and learning can be adapted; how to move away from subject-based knowledge transfer to competence development; and how to support teachers to be innovative in terms of their own organization and pedagogical methods, for the benefit of students[41].

2.4. European guidelines and the role of digital skills in relation to competences for life

Taking into consideration articles 165[42] and 166[43] of the TFEU which provide:

- EU action to encourage the development of exchanges of young people and youth workers and, after the entry into force of the Lisbon Treaty, to encourage the participation of young people in democratic life in Europe;
- the possibility for the EU to implement a vocational training policy to strengthen and integrate the intervention of the Member States which can facilitate access to vocational training and promote the mobility of instructors and apprentices, especially young people.

The Council of the European Union, starting from the principles established in the European Social Right according to which all citizens have the right to inclusive and quality education, training and lifelong learning, to participate actively in social life and to manage transitions in the labour market, has defined a reference framework with the aim of identifying:

- the key skills necessary to exercise the right of active citizenship, improve employability and personal fulfilment, health and social inclusion;
- support all stakeholders involved;

[41] On achieving the European Education Area by 2025: https://ec.europa.eu/education/sites/default/files/document-library-docs/eea-communication-sept2020_en.pdf .

[42] Consolidated version of the Treaty on the Functioning of the European Union - Part Three: Union Policies and internal actions - TIitle XII: Education, Vocational Training, Youth and Sport - Article 165 (ex Article 149 TEC): https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A12008E165

[43] Consolidated version of the Treaty on the Functioning of the European Union - Part Three: Union Policies and internal actions - TIitle XII: Education, Vocational Training, Youth and Sport - Article 166 (ex Article 150 TEC): https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A12008E166

- promote the development of skills in a lifelong learning perspective, at all levels.

This framework includes 8 key competences which are identified as:

1. literacy competence,
2. multilingual competence,
3. mathematical competence and competence in science, technology and engineering,
4. digital competence,
5. personal, social and learning to learn competence,
6. citizenship competence,
7. entrepreneurship competence,
8. cultural awareness and expression competence[44].

With the aim to further promote the development of key competences in the European Union, in May 2018, the European Council adopted a new and updated Recommendation on Key Competences for Lifelong Learning[45]. This recommendation describes the eight key competences that are considered fundamental: to achieve personal satisfaction, to develop ourselves, to keep being employable and that are also essential for our social inclusion and for our civic participation in society.

With reference to digital skills, the European Council, through the Recommendation of the European Parliament and of the Council of 22 May 2018 on key competences for lifelong learning, specifies that they must allow citizens a conscious, safe, critical and responsible use of digital technologies for learning, for working, for participation in social life and for social inclusion. The acquisition of adequate digital skills must allow citizens to use digital technologies for: understanding and using information, media and data literacy; communication and collaboration; the creation of digital content; IT security; digital wellbeing; intellectual property; problem solving and the development of critical thinking.

The EU 2018 Recommendation underlining the importance and usefulness that digital technologies have, specifies that the acquisition of adequate digital skills must also allow to understand the limitations and risks of technologies, so that they are used in a conscious, responsible and ethical way.

[44] Official Journal of the European Union (2018), Council Recommendation of 22 May 2018 on key competences for lifelong learning (Text with EEA relevance.) 2018/C 189/01. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&from=EN (Accessed 15 december 2020).
[45] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&from=EN (Accessed 15 december 2020).

Based on the EU 2018 Recommendation the JRC work on the Digital Competence Framework (DigComp), the Entrepreneurship Competence Framework (EntreComp) and the respective user guides: DigComp into Action, and EntreComp into action have been elaborated.

Subsequently, the LifeComp framework (Sala, Punie, Garkov, Cabrera Giraldez, 2020) has been elaborated and built on the European Key Competences for LLL. And, following the LifeComp conceptual framework, the JRC will also further analyse how the framework can be put into practice, focussing for instance on developing guidelines for teachers.

The LifeComp is a unique framework, which maps the key competences for life, developed by the JRC, in collaboration with the Commission department for Education, Youth, Sport and Culture (EAC). "LifeComp offers a conceptual framework of the Personal, Social, and Learning to Learn competences that can help people become more resilient and build a meaningful life in the midst of the ever-changing world" (Sala, Punie, Garkov, Cabrera Giraldez, 2020) reported JRC researchers .

LifeComp is a conceptual framework. It is non-prescriptive and can be used as a basis for the development of curricula and learning activities. The framework describes nine competences (P1-3, S1-3, L1-3) that are structured in 3 intertwined competence areas: Personal, Social, and Learning to learn.

Personal area

P1 self-regulation - Awareness and management of emotions, thoughts and behaviour

P2 flexibility - Ability to manage transitions and uncertainty, and to face challenges

P3 wellbeing - Pursuit of life satisfaction, care of physical, mental and social health, and adoption of a sustainable lifestyle

Social area

S1 empathy - The understanding of another person's emotions, experiences and values, and the provision of appropriate responses

S2 communication - Use of relevant communication strategies, domain-specific codes and tools depending on the context and the content.

S3 collaboration - Engagement in group activity and teamwork acknowledging and respecting others

Learning to learn area

L1 growth mindset - Belief in one's and others' potential to continuously learn and progress

L2 critical thinking - Assessment of information and arguments to support reasoned conclusions and develop innovative solutions

L3 managing learning - The planning, organising, monitoring and reviewing of one's own learning.

Further details and research activities related to LifeComp are available at: https://ec.europa.eu/jrc/en/lifecomp

2.5. International frameworks for learners and teachers

The European Union invests a lot in policies, strategies and tools for the acquisition of new skills and competence, as well as the up-skilling and re-skilling of people in all life stages.

As, stated by Gabriela Ramos OECD Chief of Staff and Sherpa to the G20:

"Reinforcing global competence is vital for individuals to thrive in a rapidly changing world and for societies to progress without leaving anyone behind. Against a context in which we all have much to gain from growing openness and connectivity, and much to lose from rising inequalities and radicalism, citizens need not only the skills to be competitive and ready for a new world of work, but more importantly they also need to develop the capacity to analyse and understand global and intercultural issues. The development of social and emotional skills, as well as values like respect, self-confidence and a sense of belonging, are of the utmost importance to create opportunities for all and advance a shared respect for human dignity […] Together, we can foster global competence for more inclusive societies" (OECD, 2018, pag.3).

Therefore, the attention in developing conceptual, theoretical, and meaningful European frameworks, tools and systems for skills and competences enhancement is high on the European agenda. And, with regards to the main frameworks, a short description of those available is provided.

2.6. DIGCOMP - European Digital Competence Framework

To help 21st century citizens become digitally competent, the "European Digital Competence Framework" reference tool, also known as DigComp (Ferrari A., Punie Y. and Brecko B., 2013), was created. The purpose of the tool, developed by JRC, is to help European citizens to improve their digital skills in all areas envisaged. The report called DigComp 2.0 contains an updated list of 21 digital skills, while, in the model called DigComp 2.1, the skills are divided into eight levels (Dimension 3 which is discussed below) for each of which examples of use are reported. The latter are depicted with infographics that explain the 8 levels of competence using the metaphor of "Learning to swim in the digital ocean".

DigComp, through self-assessment, can help define learning objectives, identify training opportunities and facilitate job search. In addition, by monitoring citizens' digital skills, indicators can be defined that support policy

makers in planning and designing education and training offers, as already done in some EU countries. In fact, since it was presented in 2013, the DigComp has become a precise point of reference for the development and strategic planning of initiatives on digital skills, both at European level and in individual member states of the UE.

The DigComp framework is divided into 5 dimensions:

- Dimension 1: Areas of competence identified as forming part of digital competences.
- Dimension 2: Descriptors of competences and titles relevant to each area.
- Dimension 3: 8 levels of mastery for each skill.
- Dimension 4: Knowledge, skills and attitudes applicable to each competence.
- Dimension 5: Examples of use on the applicability of the competence for different purposes.

A wider and more detailed range of levels of relevance supports the development of learning and training materials. It also helps in designing tools for citizens' skills development assessment, career guidance and job promotion. The eight levels of mastery for each competence were defined through learning outcomes (via action verbs, according to Bloom's taxonomy) drawing inspiration from the structure and vocabulary of the European Qualification Framework (EQF). In addition, each level of description contains knowledge, skills and attitudes contained in a single descriptor for each level of competence, for a total of 168 descriptors (8 x 21 learning outcomes). Each level represents an extra step in the acquisition by citizens of skills based on the cognitive challenge, the complexity of the activities they can manage and their autonomy in carrying out the activity.

The examples of use (dimension 5 of the reference framework) are contextualized within the scenarios in two areas of use: employment and learning (Carretero, Vuorikari, and Punie, 2017, pag. 12).

Mastery levels are a valuable tool for examining a skill. For example, in competence 1.2, Evaluating data, information and digital content, surely the ability to recognize generic fake news is not on the same line as knowing how to recognize the reliability of a scientific article on complex research. There are different levels in the ability to evaluate data, information and digital content. If we consider the competence 5.1, Solving technical problems, you must be able to make an adequate distinction, for example between solving a connection problem between a peripheral and the computer and being able to solve problems inherent in a complex network.

Usage examples are presented as follows:

- • Examples of proficiency levels were included for two areas of use: employment and learning.

- • Scenarios have been included for each area of expertise and area of use in order to contextualize the examples.
- • Examples have been developed for these two areas of use for each proficiency level.

To make the examples more effective, comic strips were used which represent an employment scenario and a learning scenario. The comic strip allows the reader to understand in an easy and

concrete way the progress made in acquiring the competence (Carretero, Vuorikari, and Punie, 2017, pag.18).

Each DigComp 2.1 competence is described in a table with four dimensions: dimension 1 (competence area), dimension 2 (title and descriptor of the competence), dimension 3 (proficiency levels) and dimension 5 (examples of use).

DigComp 2.1 does not include dimension 4 (knowledge, skills, and attitudes). The following are the 5 areas of:

Competence area 1: Information and data literacy

1.1 Browsing, searching, filtering data, information and digital content

1.2 Evaluating data, information and digital content

1.3 Managing data, information and digital content

Competence area 2: Communication and collaboration

2.1 Interacting through digital technologies

2.2 Sharing through digital technologies

2.3 Engaging in citizenship through digital technologies

2.4 Collaborating through digital technologies

2.5 Netiquette

2.6 Managing digital identity

Competence area 3: Digital content creation

3.1 Developing digital content

3.2 Integrating and re-elaborating digital content

3.3 Copyright and licences

3.4 Programming

Competence area 4: Safety

4.1 Protecting devices

4.2 Protecting personal data and privacy

4.3 Protecting health and well-being

4.4 Protecting the environment

Competence area 5: Problem solving

5.1 Solving technical problems

5.2 Identifying needs and technological responses

5.3 Creatively using digital technologies

5.4 Identifying digital competence gaps

2.7. DIGCOMPEDU - Digital Competence of Educators

In a context in which technologies are increasingly the protagonists of our daily life, it becomes essential to acquire those technological skills that can allow us to relate to the technologies themselves, or digital skills. In the acquisition and development of these skills, the education sector is called to a role of great responsibility, as it must train the citizens and the political class of the future. In this context, educators at all levels from early childhood to higher and adult education, including general and vocational training, special needs education and contexts of non-formal learning, need to develop a wider range of skills than a few years ago, dedicating particular care and attention to the acquisition of digital skills, which must be learned and then transmitted to learners. DigCompEdu (Digital Competence of Educators) was born from the analysis and grouping of numerous frameworks, self-assessments and training programs developed both internationally and nationally to describe and self-assess the digital skills of educators. DigCompEdu is a reference framework, with a common language and approach, scientifically validated, which aims to favor political choices, to improve regional and national training tools and programs, and the exchange of best practices to transnational level.

The proposed DigCompEdu framework aims to reflect on the digital skills of educators, in order to create a coherent starting model, common to teachers of all levels of education, to be able to evaluate and identify a path to develop a satisfactory pedagogical digital competence. Surely DigCompEdu does not oppose the various national, regional and local initiatives to acquire the digital competence of educators, but completes them as it seeks to put together the various diversities attributable to various national contexts. Furthermore, DigCompEdu does not intend to assert itself on other models, but also in this case it tends to integrate them to encourage reflection and debate on a fundamental topic for the present and especially for the future, which concerns the digital skills of educators.

"The framework is based on work carried out by the European Commission's Joint Research Centre (JRC), on behalf of the Directorate-General for Education, Youth, Sport and Culture (DG EAC)."

- A - Educators professional competences
- 1 - Professional engagement
- Organisational communication
- Professional collaboration
- Reflective practice
- Digital Continuous Professional Development (CPD)
- B - Educators pedagogic competences
- 2 – Digital resources
- Selecting digital resources
- Creating and modifying digital resources
- Managing, protecting and sharing digital resources
- 3 – Teaching and Learning
- Teaching
- Guidance
- Collaborative learning
- Self-regulated learning
- 4 – Assessment
- Assessment strategies
- Analysing evidence
- Feedback and planning
- 5 – Empowering Learners
- Accessibility and inclusion
- Differentiation and personalisation
- Actively engaging learners
- C – Learners' competences

- 6 – Facitating leaner's digital competence
- Information and media literacy
- Digital communication and collaboration
- Digital content creation
- Responsible use
- Digital problem solving

The sphere of "Educators pedagogic competences which includes points 2 to 5, we can define it as the most important sphere, because it concerns the pedagogical ability of educators to properly use digital competences to promote efficient, inclusive and innovative teaching and learning strategies. Specifically: area 1 concerns the professional skills of using digital technologies in the relationships between the educator and the various actors involved in the teaching process; area 2 measures the use of digital skills in planning teaching and learning activities; in area 3 it is verified how digital skills are used in practice and in area 4 it is examined how digital skills are used in the process of evaluating teaching and learning. Area 5, on the other hand, focuses on the use of digital technologies in defining the teaching strategies to be used to encourage learner learning. Finally, in area 6, we observe what are considered crucial pedagogical skills to encourage the development of digital skills in students. Areas 5 and 6 highlight a fundamental aspect: it is not only important to know how to use technologies in teaching to have excellent learning results, but it is necessary that the good educator is able to use digital technologies as a means to encourage full involvement of students in order to guarantee excellent learning results. Therefore, it is clear that the teaching process must necessarily be focused on students and that digital technologies must be considered simply as the best means to promote learning.

It should be noted that in area 6 reference is made to specific digital skills of students: the first three are connected with what is stated in the DigComp in relation to the meaning of digital competence. Specifically we find: 6.1 Information and media literacy; 6.2 Digital communication & collaboration; 6.3 Digital content creation. Furthermore, reference is made to the well-being of the person, that is the ability to "live technologies" in a sustainable way, from a personal and social point of view (6.4 Wellbeing) and to the ability to solve complex problems (6.5 Digital problem solving).

To help educators identify their strengths and areas for improvement, a progression model is defined that starts from a basic level (A1) up to advanced level (C2). For ease of reference, these competence stages are linked to the six proficiency levels used by the Common European Framework of Reference for Languages (CEFR), ranging from A1 to C2.

The six levels are identified as follows:

- Newcomer (A1)
- Explorer (A2)
- Integrator (B1)
- Expert (B2)
- Leader (C1)
- Pioneer (C2)

In each of the six areas identified, the levels are declined, and short Proficiency statements are associated. For example:

level 6 - Necomer (A1) - Making little use of strategies fostering learners' information literacy. - I do not or only rarely consider how I could foster learners' information and media literacy (Redecker, Punie, 2017).

Finally, from a conceptual point of view, CEFR organises the six levels in three blocks, which reflects the fact that while the levels A1 and A2, B1 and B2 and C1 and C2 are closely related, there is a cognitive leap between A2 and B1 and B2 and C1 respectively. This is also true for the DigCompEdu competence progression (Redecker, Punie, 2017, pag.28).

2.7.1. ENTRECOMP - Entrepreneurship Competence Framework

The origin of the EntreComp study dates back to 2006, when the "Recommendation on key competences for lifelong learning" identified a "sense of initiative and entrepreneurship" as one of the 8 key competences for all citizens (European Parliament and Council, 2006) . The objective of the European Commission was to define a common reference framework for entrepreneurship, which was identified as the necessary competence to support citizens in developing the capacity for personal fulfillment and development, active citizenship, social inclusion and employment in the knowledge society.

In the EntreComp framework (Bacigalupo, Kampylis, Punie, Van den Brande, 2016), entrepreneurship competence is considered a soft skill, individual and / or group, usable in all life contexts, which allows citizens to devote themselves to their personal development, actively participate in social development, enter the market of work (as employees or self-employed), and to create businesses with cultural, social or commercial purposes. Entrepreneurship is understood as the creation of value in any area: public sector, private sector, third sector or a combination of the three. For this reason it is defined:

"Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social. " (FFE-YE, 2012)

The EntreComp is developed through 3 areas of expertise: Ideas and opportunity, Resources, Into action; which emphasize how it is possible to use entrepreneurial competence to transform ideas and opportunities into actions through the use of resources, which can be personal, material or non-material (knowledge, skills and specific attitudes). The three areas of competence - which are closely related to each other and should be treated as part of a whole - comprise 15 competences, an 8-level progression model and a comprehensive list of 442 learning outcomes. The EntreComp framework is the result of extensive and intensive research and has been validated through iterative stakeholder consultations. Areas, Competences and Hints are listed below:

Tab. 2: Areas, Competences, hints, of EntreComp Framework

Areas	Competences	Hints
Ideas and opportunity	Spotting opportunities	Use your imagination and abilities to identify opportunities for creating value
	Creativity	Develop creative and purposeful ideas
	Vision	Work towards your vision of the future
	Valuing ideas	Make the most of ideas and opportunities
	Ethical and sustainable thinking	Assess the consequences and impact of ideas, opportunities and actions
Resources	Selfawareness and selfefficacy	Believe in yourself and keep developing
	Mobilizing resources	Gather and manage the resources you need
	Financial and economic literacy	Develop financial and economic know how
	Mobilizing others	Inspire, enthuse and get others on board
Into action	Taking the initiative	Go for it
	Planning and management	Prioritize, organize and follow-up
	Coping with uncertainty, ambiguity and risk	Make decisions dealing with uncertainty, ambiguity and risk
	Working with others	Team up, collaborate and network
	Learning through experience	Learn by doing

Source: EntreComp Framework[46]

In consideration of the fact that entrepreneurial learning refers to the creation of value, it cannot simply be measured as a simple learning result. However, the latter can be used as a reference for different purposes. In

[46] https://publications.jrc.ec.europa.eu/repository/bitstream/JRC101581/lfna27939enn.pdf

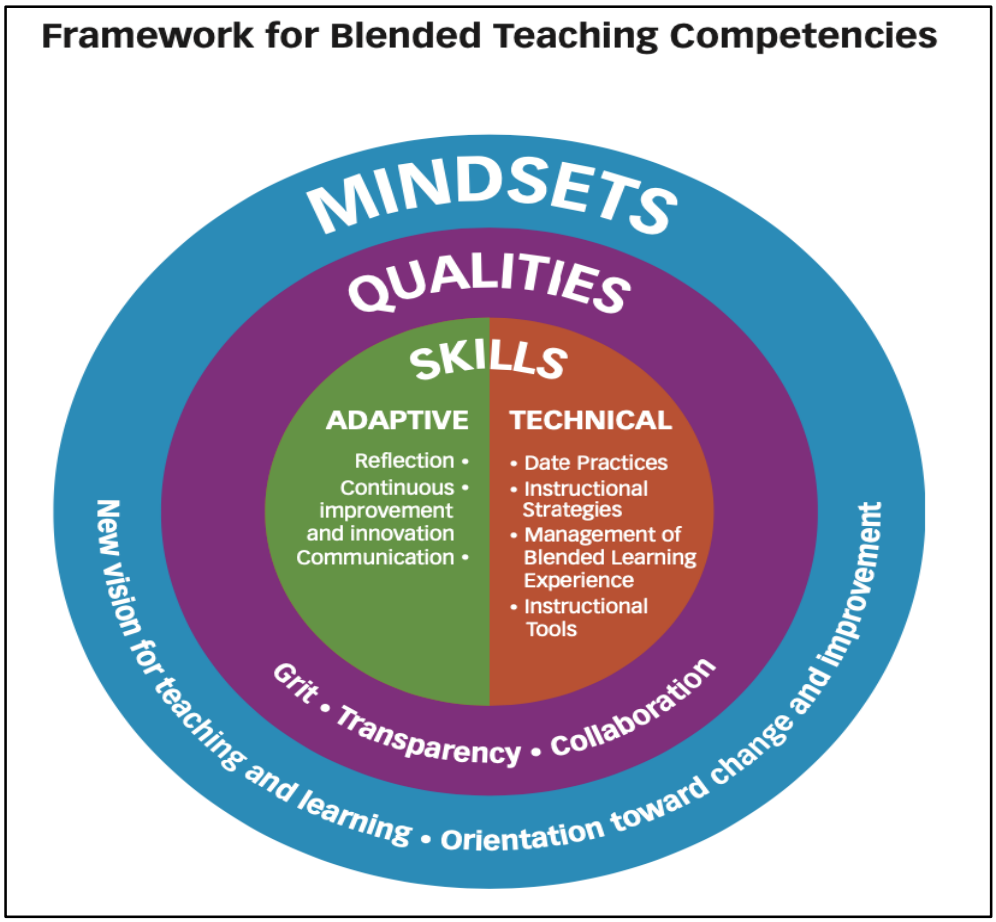
particular, learning outcomes can also and above all be used in the tertiary education sector for the design of curricula that can be in line with the needs of society.

It should underline that, although widely endorsed, the framework has not yet been adapted to, or tested in real settings.

2.7.2. iNACOL Blended Learning Teacher Competency Framework

The great dynamism of technological innovation also affects the HE sector, in particular on the skills that teachers must possess in order to be able to adequately deal with innovative teaching methods that allow students to be placed at the center of the process, in particular in use of the blended learning methodology. iNCOL (The International Association for K-12 Online Learning) has developed a framework (Powell, Rabbitt, Kennedy, 2014), easy to use and implementable, with the aim of helping the various educational actors to assimilate new forms of pedagogy, in order to interact effectively with academic students helping them to develop and grow.

Fig. 8 – Framework for blended teaching competencies



Source: iNACOL Blended Learning Teacher Competency Framework

The tool was designed as a starting point and not as a simple user manual, assuming that teachers are agents of learning and innovation in their communities. They are called upon to respond to the high academic and behavioral expectations that students have and for this, they must be able to provide adequate resources to students, which go beyond simply providing the same inputs to everyone. Therefore, they must be available and above all able to make use of ever greater resources in order to enhance all students. For this reason, the teacher must be positively predisposed to learning focused on skills. The framework focuses on the mentalities, qualities and skills that support the creative and continuous improvement of professionals, who must acquire certain skills to interact effectively with change.

The tool identifies 4 areas, within which 12 specific skills are defined, which are briefly described and the way in which individuals develop them is specified. The areas identified are the following:

- • Mental competences: they include the values and / or fundamental beliefs that guide the thinking, behaviors, and actions of the HE teacher and that align with the objectives of educational change and mission. In blended learning, practitioners must understand, adopt and engage in mindsets that enable the development of new ways of teaching and learning.
- • Quality competencies: refer to personal characteristics and role models that help academic staff make the transition to new ways of teaching and learning.
- • Adaptive skills: these are general skills that apply to roles and subject areas. They develop through modeling, coaching and reflective practice.
- • Technical skills: these include the "know-how" and specific skills that teachers use in carrying out their work (Powell, Rabbitt, Kennedy 2014),

2.8. DIGCOMPORG - Digitally Competent Educational Organisations

Digital technologies are having a significant impact in all educational sectors, involving all the actors and aspects involved in the educational process. Although digital technologies offer significant tools to promote learning, they certainly are not able to guarantee it, as many process variables are directly related to the actions and strategies developed by educational institutions. Many self-assessment tools are used in various EU member countries, outlining uneven procedures and results, not in line with the results expected by the European Community. To foster a systemic approach capable of generating value by promoting transparency, comparability and peer learning, the DigCompOrg framework (European framework for digitally competent educational organizations) was created, able to support primary, secondary, VET schools and institutes, of higher education, in the process of integration and development of digital technologies in learning, through critical self-reflection on the current

state and on the progress made and / or to be made. The tool can certainly bring order to the heterogeneous situation of the various member countries, offering a unique framework capable of making a comparative analysis between the various measurement methodologies and initiatives in place to develop and improve the relationship between digital technologies and learning. Furthermore, the DigCompOrg tool can support policy makers in defining strategic plans aimed at promoting global policies that can foster digital learning by involving all stakeholders of the education system at all levels (Kampylis, Punie & Devine, (2015).

"The European Reference Framework of Digitally Competent Educational Organisation is an initiative of the European Commission, Directorate General for Education and Culture (DG EAC). Research and design of the Framework was carried out by the Joint Research Centre - Institute for Prospective Technological Studies (JRC-IPTS).

Representatives of the EU Member States supported the development of the Framework through the Working group on Digital and online learning (WG DOL). Experts involved in the development of existing frameworks and self-assessment questionnaires promoting the use of digital technologies in education and training systems provided contributed also to the development of DigCompOrg."[47]

The DigCompOrg frame consists of 7 thematic elements, plus there is the possibility of adding an additional layer to include other elements related to specific sectors:

1. Leadership & Governance Practices
2. Teaching and Learning Practices
3. Professional Development
4. Assessment practices
5. Content and Curricula
6. Collaboration and Networking
7. Infrastructure

   Sector- specific element(s)

The 7 levels are in turn divided into 15 key sub-elements, linked to specific sectors (Tab. 3):

1. Integration of Digital-age Learning is part of the overall mission, vision, and strategy.
2. Strategy for digital- age learning is supported by an implementation plan.

[47] European Framework for Digitally Competent Educational Organizations: https://ec.europa.eu/jrc/en/digcomporg

3. A Management and Governance Model is in place.
4. Digital Competence is promoted, benchmarked and assessed.
5. A rethinking of roles and pedagogical approaches takes place.
6. Assessment Formats are engaging and motivating.
7. Informal and Non- Formal Learning are recognized.
8. Learning Design is Informed by Analytics
9. Digital Content and OER are widely promoted and used.
10. Curricula are redesigned or re- interpreted to reflect the pedagogical possibilities afforded by digital technologies.
11. Networking, sharing & collaboration is promoted.
12. A strategic approach is taken to communication.
13. Partnerships are developed.
14. Physical and Virtual Learning Spaces are designed for digital- age learning.
15. The digital infrastructure is planned and managed.

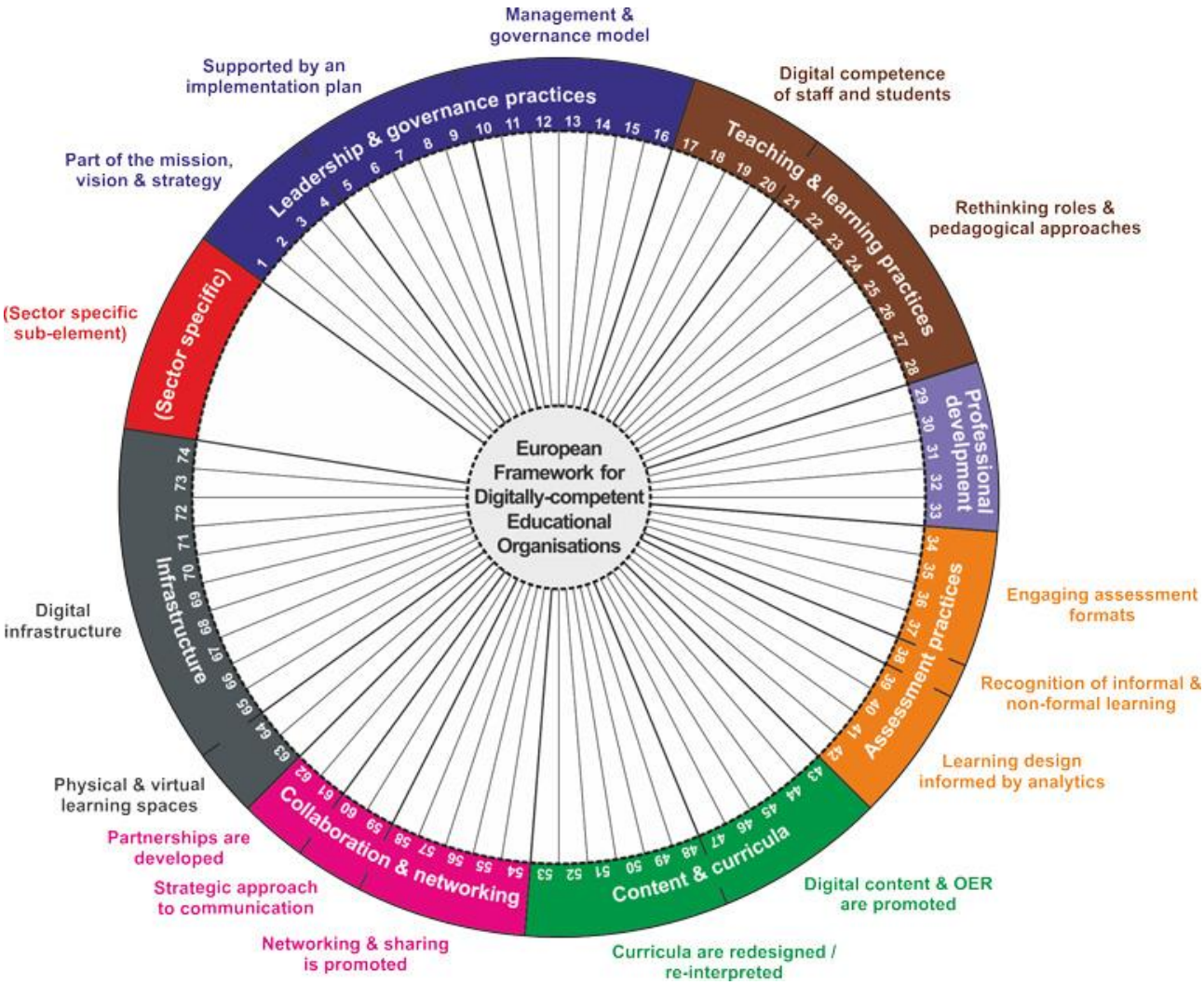
Tab. 3: Thematic elements and sub-elements DigCompOrg

Thematic elements	Sub-elements
1 - Leadership & Governance Practices	1 - Integration of Digital-age Learning is part of the overall mission, vision and strategy
	2 - Strategy for digital- age learning is supported by an implementation plan
	3 - A Management and Governance Model is in place
2 - Teaching and Learning Practices	4 - Digital Competence is promoted, benchmarked and assessed
	5 - A rethinking of roles and pedagogical approaches takes place
3 - Professional Development	–
4 - Assessment practices	6 - Assessment Formats are engaging and motivating
	7 - Informal and Non- Formal Learning are recognised
	8 - Learning Design is Informed by Analytics
5 - Content and Curricula	9 - Digital Content and OER are widely promoted and used

	10 - Curricula are redesigned or re-interpreted to reflect the pedagogical possibilities afforded by digital technologies
6 - Collaboration and Networking	11 - Networking, sharing & collaboration is promoted
	12 - A strategic approach is taken to communication
	13 - Partnerships are developed
7 - Infrastructure	14 - Physical and Virtual Learning Spaces are designed for digital- age learning
	15 - The digital infrastructure is planned and managed
Sector- specific element(s)	Sector- specific element(s)

Source: DigCompOrg framework

Fig. 9 - DigCompOrg Framework



Source: Kampylis, Punie & Devine, (2015)

The 15 sub-levels are in turn declined through 74 descriptors.

It is important to point out that the DigCmpOg tool can complement the DigComp and DigCompEdu tool but does not replace them (Kampylis, Punie & Devine, (2015).

2.9. Teachers professionalization in Europe

Ministers of Education, meeting in the Education Council, have on three occasions (European Union 2007, 2008, 2009) committed themselves to improving the whole continuum of teacher education: the recruitment and selection of teachers, the quality of initial teacher education, the systematic support to beginning teachers, the relevance and quality of career-long opportunities for professional development.

Concerning the competences of teachers, Ministers have recognized that:

- the knowledge, skills, and commitment of teachers, as well as the quality of school leadership, are the most important factors in achieving high quality educational outcomes. [...] For this reason, it is essential … to ensure that those recruited to teaching and school leadership posts are of the highest caliber and well-suited to the tasks they must fulfil… great care and attention should … be devoted to defining the required profile of prospective teachers and school leaders, to selecting them and preparing them to fulfil their tasks (European Union, 2009, p. 302/7).

But, the roles of schools, training centers and universities are changing. And, therefore also teachers of all levels are changing, as well as the expectations that we have about them: "teachers are asked to teach in increasingly multicultural classrooms, integrate students with special needs, use ICT for teaching effectively, engage in evaluation and accountability processes, and involve parents in schools (OECD, 2009)". Furthermore, a World Summit on Teaching noted that teachers need to help students acquire not only "the skills that are easiest to teach and easiest to test" but more importantly, ways of thinking (creativity, critical thinking, problem-solving, decision-making and learning); ways of working (communication and collaboration); tools for working (including information and communications technologies); and skills around citizenship, life and career and personal and social responsibility for success in modern democracies" (OECD 2011).

There are many factors that may encourage governments (or others) to define the competences that they expect teachers to possess at different stages of their career. These include:

- the results of research and of international comparisons such as PISA and TALIS;
- international commitments such as the Bologna Process of Higher Education reform or the development of Qualifications Frameworks;
- the desire to enhance the quality or effectiveness of education;
- other system developments, such as moves towards expressing school curricula in terms of learning outcomes, or reforming the system of teacher education;
- demand from parents or other stakeholders for greater accountability in education systems.

Concerning the teaching profession itself, motivating factors might include:

- the need to make the teaching profession more attractive and provide for career progression;
- the desire to promote teachers' lifelong learning and engagement in continuing professional development;
- demand for the professionalisation of teaching;
- a desire to clarify teachers' roles;

- the growing importance of the role of school leadership; and the need to assess the quality of teaching.

The question of teachers' competences needs to be set in the wider context of the European Union's work to ensure that all citizens have the competences (knowledge, skills and attitudes) they require. The European Parliament and the European Council in 2006 adopted a Recommendation on Key Competences for Lifelong Learning; among the eight key competences, the importance of transversal competences (digital, learning to learn, civic competences) stands out - in particular, the meta-competence of learning to learn (adjusting to change, managing and selecting from huge information flows) (European Union, 2006). Teachers should understand, deploy and assess key competences; this entails interdisciplinary collaboration skills, as underlined in the document Assessment of Key Competences in initial education and training (European Commission, 2012); teachers, at all levels of Education and Training, should model these Key Competences as well as helping learners to acquire them.

Finally, concerning the role, competences and working conditions of teachers in a blended learning approach should be included the ability to:

- select an appropriate teaching and learning approach with learning tasks that are complementary and coherent across learning environments,
- shift mindset and share challenges,
- take risks in order to innovate practice and build new experiences,
- design appropriate assessment for learning,
- support students as individuals and as a class community,
- undertake regular reflection and continuous development,
- share practice,
- take leadership roles where appropriate,
- liaise with families and the wider school community,
- support newly qualified teachers,
- manage own working conditions.

2.10. Quality in European HE in teaching and learning contexts.

In June 2009, the EU launched a Recommendation of the Council and of the Parliament in which it urges the adoption of a quality assurance system for education and vocational training, the European Union Recommendation (European reference framework for the guarantee of quality of vocational education and

training - EQAVET), proposes a reference model, and some implementation tools, which are developed in four phases:

- design: during this phase, the objectives to be pursued and the indicators capable of measuring their achievement have to be identified. In addition, standards of process inputs and outputs have to be defined and quality assurance devices have to be implemented. In this phase it is necessary to define an open line of communication with all the stakeholders, with the aim of identifying specific needs.
- development: in this phase all the resources necessary for carrying out the activities must be taken into consideration, including the skills of the teachers, the tools to be used and the guidelines to follow. It is essential to adopt an effective communication system that clearly defines all the rules and procedures that the actors involved in the process must follow.
- evaluation: in this phase, the processes, the performance of the teachers and the learning outcomes of the students have to be evaluated. Furthermore, the satisfaction of the learners and staff involved must also be measured. The success of the evaluation is closely linked to the method and frequency of measurements.
- review: in this phase the evaluations must be discussed with the stakeholders, with the aim of identifying the critical issues and areas for improvement to define the types of intervention to be implemented to improve the entire teaching and learning process. Furthermore, the results of the evaluations must be made public.

The European Recommendation, in addition to identifying quality assurance in all four expected phases, referring to the quality of the education, training and VET provider systems, also provides a (non-mandatory) tool to support the assessment and the improvement of quality at the level of the system and of the providers.

The EQAVET constitutes a relevant reference framework for the development and the implementation of quality assurance mechanisms in different field, included HE. Moreover, it supports the creation of a quality culture based on the proposed quality cycle (with its four phases) which can be transferred in different teaching and learning contexts.

Another relevant input related to quality assurance in teaching and learning contexts comes from the European level with the "Quality assurance for school development"[48] report.

In this European Commission's report, eight principles are identified to be followed to define a decision-making process regarding quality assurance, highlighting, in particular, the importance of a mutual relationship between external and internal measurement. At the basis of the identified principles, there is the need to systematically

[48] Quality assurance for school development: https://www.schooleducationgateway.eu/downloads/Governance/2018-wgs2-quality-assurance-school_en.pdf

review educational processes so that they can be confirmed and improved, with the support of innovation, quality assurance, equity and efficiency. The member countries, while maintaining their autonomy in the definition of tools, processes and actors involved in the quality process, have a common goal of improving teaching and learning, aimed at ensuring better results for students.

The eight guiding principles identified by the European Commission for an effective quality assurance system oriented to the development of education systems are the following:

- Coherence: defining balanced and coherent systems suitable to satisfy the requests and expectations of the stakeholders involved in the educational systems.
- Professional learning communities: define adequate quality assurance policies to support learning communities, aimed at improving learning and promoting the creation of opportunities for all students.
- Trust and shared accountability: Establish a relationship of trust and respect between external QA and internal QA.
- Support innovation: Creating and fostering innovation opportunities, so that managers and teachers of educational institutions can seize them.
- Shared understanding and dialogue: developing a common and comprehensive language for both external and internal actors involved in measuring quality.
- Networks: develop networks between schools and local communities so that they can support collective commitment, build social and intellectual capital and give new life to synergies between school systems.
- Building capacity for data: Investing in developing the capacity of key actors to generate, interpret and use data.
- Different data for balanced view: Collect qualitative and quantitative data over time, so that they can support decision-making both within and outside all school systems.

Although EU countries have different education systems, they share common policies and opportunities when it comes to ensuring quality. In particular, setting objectives and measurement methods for the evaluation of education systems and student learning, which consider the diversification, decentralization and multilevel existing in the various contexts. Furthermore, it is important to encourage dialogue between all the stakeholders involved, ensuring the transparency of data on quality assurance and evaluating the priorities related to human and financial resources.

Several European countries have created frameworks for measuring quality, integrating both internal and external assurance mechanisms which include student and teacher evaluation, institution self-assessments and

inspectorates. The resulting results provide data on the quality of teaching, learning and educational institutions. Higher education (HE), as well as other sectors of education, cooperate to ensure continuity of standards across the sectors.

The European Commission, in addition to suggesting the adoption of the eight guiding principles for quality assurance, recommends the following to member countries:

At European level:

- Countries continue to take opportunities for peer learning and peer counselling in order to reflect on and refine their own quality assurance approaches.
- Discussions between countries continue to take forward the achievements of the ET2020 Working Group Schools on the particular challenges and opportunities related to quality assurance, especially as regards generating, interpreting and using data at different levels and related capacity-building.
- The impact of this work is monitored to assess its usefulness in policy development and guide future co-operative work.
- Recommendations on quality assurance are coherent with other recommendations on the governance of school education.

At national level:

- New quality assurance approaches should start from the strengths of schools and school education systems and be developed and monitored from there.
- In considering new approaches, it is useful to make some tactical planning, particularly in being prepared for the reaction of stakeholders.
- School self-evaluation should be strengthened, including capacity-building for school leaders and teachers; learning from other sectors that have regularly engaged in internal monitoring; and developing tools where appropriate.
- The role of school inspectorates should be to facilitate improvement for example through follow-up with schools in identified needs and through disseminating good practices.
- Coherence of quality assurance mechanisms with other relevant policies should be ensured.
- Countries should take a forward-looking perspective: not dwelling on past needs but acting towards a vision of the future. (Looney, Clemson, 2018, pag.33)

In the abovementioned context, the various guidelines for the quality assurance of distance and e-learning in Higher Education can still be very relevant and useful, too.

ENQA's 2018 considerations for quality assurance of e-learning provision outline a number of different considerations and indicators for external and internal evaluation of processes and programmers. For example:

"As with traditional, campus-based provision, external quality assurance will take into account an institution's particularities – e-learning included. Usually, the procedure will include the involvement of relevant stakeholders at all levels. The teaching and learning process, the learning resources, the VLE [virtual learning environment], and the student support system for e-learning will be additionally considered. It is a good opportunity for institutions to demonstrate their involvement in pedagogical innovation projects and the involvement of stakeholders (students and teaching staff involved with e-learning) in the design of methodologies". (Huertas, Biscan, Ejsing et all, 2018, p. 17).

Tertiary education institutions increasingly tend to complement their programs with e-learning teaching and learning modes. This requires particular attention to quality, innovation, and the number of resources to invest. By now, even for e-learning, institutes develop innovative strategies, which necessarily must relate research with pedagogy and the planning of learning and must be aimed at achieving certain objectives. Furthermore, it is necessary, at a national and international political level, to address some critical issues that have emerged with the use of digital technologies, which concern ethical issues, the protection of data privacy and/or intellectual property rights. These aspects have necessarily been included in a quality measurement program that considers the following aspects:

- Institutions should define planning and approval processes for programs suitable for achieving the intended outcomes while also considering the expected learning objectives. The qualification that can be obtained have to be specified, communicated and have to refer to the level of the national qualification's framework for higher education and the qualifications framework of the European Higher Education Area;
- programs should be delivered taking into account (also in the evaluation) that students must be considered at the center of the process and therefore they must be motivated to take an active role in the learning process.
- Institutions should properly and comprehensively define, apply and communicate all stages of the curriculum and related areas;
- Academic institutions should verify, through fair and transparent processes for staff recruitment and development, that the teachers involved in the teaching programs have adequate skills;

- Academic institutions should have adequate financial resources for all the activities carried out, including the correct and complete collection of information (data and indicators concerning e-learning activities) necessary to be able to effectively carry out their programs and activities;
- information regarding activities and programs should be: published clearly, accurately and objectively; easy to consult; constantly updated;
- programs should be monitored and reviewed periodically (communicating changes to students), in order to achieve the set objectives, responding to the needs of students and society;
- Institutions should be subjected to cyclical quality measurement both internally and externally, using external experts who are also supported by student members. The measurements must be carefully defined and designed by involving all the players involved in the processes, referring to ESG standards and taking into account the regulations in force. All results have to be published clearly, comprehensively and have to be accessible to the entire academic community. If formal decisions are made on the basis of the reports, the decisions should be published with the report.

Conclusions

The European Commission declares that:

"the move to a resource-efficient, circular, digitised and low-carbon economy could create more than 1 million jobs by 2030. Artificial intelligence and robotics alone will create almost 60 million new jobs worldwide in the next 5 years. Other jobs may change or even disappear. The coronavirus pandemic has amplified the skills trends in the labour market, accelerating both the need and opportunities for change. In a fast-moving labour market and society, lifelong learning must become a reality"[49].

In relation to the above context and in line with the European Higher Education Area and the EU Lifelong Learning strategy, Higher Education is a catalyst for green, inclusive and digital societies and economies. Moreover, a rapid shift towards a green and digital transformation is changing the way we work, learn, take part in society and lead our everyday lives. Europe can only reach these opportunities if its people develop the right skills and competences. Finally, the Covid 19 pandemic has also had a profound impact on millions of people in the EU that have lost their job or experienced significant income loss. Many will need to acquire new skills and move to new jobs in a different sector of economy. More will need to upskill and reskill to continue working with

[49] Commission presents European Skills Agenda for sustainable competitiveness, social fairness and resilience: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1196

a new job or new environment. For Higher Education all these will represent a very challenging transition, phase and adaptation to new learning and teaching settings.

References

Bacigalupo, M., Kampylis, P., Punie, Y., Van den Brande, G. (2016), *EntreComp: The Entrepreneur- ship Competence Framework*, Luxembourg, Publication Office of the European Union; EUR 27939 EN; doi:10.2791/593884. Available at: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC101581/lfna27939enn.pdf (Accessed 15 december 2020).

Butera F. (2017), "Lavoro e organizzazione nella quarta rivoluzione industriale: la nuova progettazione socio-tecnica", in L'industria, Rivista di economia politica industriale, pp. 291-316, https://www.rivisteweb.it/doi/10.1430/88846 (Last access 11-12-2020).

Carretero S., Vuorikari R. and Punie Y. (2017), *The Digital Competence Framework for Citizens with eight proficiency levels and examples of use*, Luxembourg, Publications Office of the European Union. Available at: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC106281/web-digcomp2.1pdf_(online).pdf (Accessed 15 December 2020).

Directorate-General for Education, Youth, Sport and Culture (2019), *Key competences for lifelong learning*, Luxembourg, Publications Office of the European Union. Available at: https://publications.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en (Accessed 15 december 2020).

EHEA (1999), *The Bologna Declaration of 19 June 1999*, Available at: http://www.ehea.info/media.ehea.info/file/Ministerial_conferences/02/8/1999_Bologna_Declaration_English_553028.pdf (Accessed 15 december 2020).

European Commission (2010), *Communication from the Commission Europe 2020, A strategy for smart, sustainable and inclusive growth,* COM(2010) 2020. Available at: https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf (Accessed 15 december 2020).

European Commission (2016), *Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of the regions, A new skills Agenda for Europe*, COM(2016) 381. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52016DC0381 (Accessed 15 december 2020).

European Commission (2016), *Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of the regions Investing in Europe's youth*, COM(2016) 940 final. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0940&from=EN (Accessed 15 december 2020).

European Commission (2017), *White paper on the future of Europe. Reflections and scenarios for the EU27 by 2025,* 10.2775/66626. Available at: https://ec.europa.eu/commission/sites/beta-political/files/white_paper_on_the_future_of_europe_en.pdf (Accessed 15 december 2020).

European Commission, Government offices of Sweden (2017), *Concluding report Social Summit for Fair Jobs and Growth, Gothenburg, Sweden, 17 November 2017*. Available at: https://ec.europa.eu/commission/sites/beta-political/files/concluding-report-social-summit_en.pdf (Accessed 15 december 2020).

European Commission (2017), *Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of the regions A renewed EU agenda for higher education,* COM(2017) 247 final. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017SC0164&from=EN (Accessed 15 december 2020).

European Commission (2019), *Communication from the Commission The European Green Deal*, COM(2019) 640 final. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0640 (Accessed 15 december 2020).

European Commission (2020), *Communication from the Commission Europe 2020 A strategy from smart, sustainable and inclusive growth.* Available at: https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf (Accessed 15 december 2020).

European Commission, (2020), *European skills agenda for sustainable competitiveness, social fairness and resilience*. Available at: https://ec.europa.eu/social/BlobServlet?docId=22832&langId=en (Accessed 15 december 2020).

European Commission (2020), *Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of the regions on achieving the European Education Area by 2025,* COM(2020) 625 final. Available at: https://ec.europa.eu/education/sites/default/files/document-library-docs/eea-communication-sept2020_en.pdf (Accessed 15 december 2020).

European Commission (2020), *Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of the regions a new skills agenda for Europe – Working together to strengthen human capital, employability and competitiveness* COM(2016) 381 final. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0381&from=EN (Accessed 15 december 2020).

European Commission (2020), *Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of the regions European Skills Agenda for sustainable competitiveness, social fairness and resilience* COM/2020/274 final. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0274 (Accessed 15 december 2020).

European Commission (2020), *Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of the regions Youth Employment Support: a Bridge to Jobs for the Next Generation,* COM(2020) 276 final. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0276&from=EN (Accessed 15 december 2020).

European Commission (2020), *Digital education plan 2021 – 2027. Resetting education and training for the digital age.* Available at: https://ec.europa.eu/education/sites/education/files/document-library-docs/deap-communication-sept2020_en.pdf (Accessed 15 december 2020).

European Council (2019), *A new strategic agenda 2019 – 2024.* Available at: https://www.consilium.europa.eu/media/39914/a-new-strategic-agenda-2019-2024.pdf (Accessed 15 december 2020).

European Parliament and the Council. (2006). *Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning. Official Journal of the European Union*, L394/310. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:394:0010:0018:en:PDF (Accessed 15 december 2020).

European Parliament, the Council and the European Commission (2018), *European Pillar of Social Rights, Publications Office of the European Union,* DOI 10.2792/95934. Available at: https://ec.europa.eu/commission/sites/beta-political/files/social-summit-european-pillar-social-rights-booklet_en.pdf (Accessed 15 december 2020).

European Union (2007), *Conclusions of the Council and of the Representatives of the Governments of the Member States, meeting within the Council of 15 November 2007, on improving the quality of teacher* education

(Official Journal C 300/6, 12.12.2007). Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2007:300:0006:0009:EN:PDF (Accessed 15 december 2020).

European Union (2008). *Conclusions of the Council and of the Representatives of the Governments of the Member states, meeting within the Council of 21 November 2008 on preparing young people for the 21st century: an agenda for European cooperation on schools* (Official Journal 2008/C 319/08, 13.12.2008). Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:319:0020:0022:EN:PDF (Accessed 15 december 2020).

European Union (2009). *Council Conclusions of 26 November 2009 on the professional development of teachers and school leaders* (Official Journal 2009/C 302/04, 12.12.2009). Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:302:0006:0009:EN:PDF (Accessed 15 december 2020).

Ferrari A., Punie Y. and Brečko B. (Eds.) (2013), *A Framework for Developing and Understanding Digital Competence in Europe,* Luxembourg, Publications Office of the European Union. Available at: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC83167/lb-na-26035-enn.pdf (Accessed 15 december 2020).

FFE-YE. (2012). Impact of Entrepreneurship Education in Denmark - 2011. In L. Vestergaard, K. Moberg & C. Jørgensen (Eds.). *Odense: The Danish Foundation for Entrepreneurship - Young Enterprise*. Available at: https://eng.ffe-ye.dk/media/202248/impact_of_entrepreneurship_education_in_denmark_2011.pdf (Accessed 15 december 2020).

Huertas E., Biscan I., Ejsing C., et all (2018), *Considerations for quality assurance of e-learning provision*, Occasional papers 26, Lindsey Kerber, Brussels. Available at: https://enqa.eu/indirme/Considerations%20for%20QA%20of%20e-learning%20provision.pdf (Accessed 15 december 2020).

Looney J., Clemson H. G., (2018), *Quality assurance for school development. Guiding principles for policy development on quality assurance in school educatio*n, Produced by the ET 2020 Working Groups. Available at: https://www.schooleducationgateway.eu/downloads/Governance/2018-wgs2-quality-assurance-school_en.pdf (Accessed 15 december 2020).

OECD (2009). *Creating Effective Teaching and Learning Environments. First Results from TALIS*. Paris: OECD Available at: http://www.oecd.org/dataoecd/17/51/43023606.pdf (Accessed 15 december 2020).

OECD (2011), *Preparing Teachers and Developing School Leaders for 21st Century - Lessons from around the world (Background Report for the International Summit on the Teaching Profession).* Available at: https://www.oecd.org/site/eduistp2012/49850576.pdf (Accessed 15 december 2020).

OECD (2018), *Preparing Our Youth for an Inclusive and Sustainable World: The OECD PISA Global Competence Framework*, OECD Publishing, Paris. Available at: https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf (Accessed 15 december 2020).

Official Journal of the European Union (2018), *Council Recommendation of 22 May 2018 on key competences for lifelong learning (Text with EEA relevance.) 2018/C 189/01.* Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&from=EN (Accessed 15 december 2020).

Powell A., Rabbitt B., Kennedy K.(2014), *iNACOL: Blended Learning Teacher Competency Framework, Vienna, VA: International Association for K–12 Online Learning*. Available at: https://aurora-institute.org/wp-content/uploads/iNACOL-Blended-Learning-Teacher-Competency-Framework.pdf (Accessed 15 december 2020).

Redecker C., Punie Y. (2017), *European Framework for the Digital Competence of Educators. DigCompEdu, JRC Science for policy report,* Luxembourg, Publications Office of the European Union. Available at: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC107466/pdf_digcomedu_a4_final.pdf (Accessed 15 december 2020).

Sala, A., Punie, Y., Garkov, V. and Cabrera Giraldez, M. (2020), *LifeComp: The European Framework for Personal, Social and Learning to Learn Key Competence,* EUR 30246 EN, Publications Office of the European Union, Luxembourg. Available at: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC120911/lcreport_290620-online.pdf (Accessed 15 december 2020).

The European Parliament, the Council and the Commission *proclaimed the European Pillar of Social Rights at the Social Summit for Fair Jobs and Growth in Gothenburg (Sweden), on 17 November 2017*, Available at: https://ec.europa.eu/commission/sites/beta-political/files/social-summit-european-pillar-social-rights-booklet_en.pdf (Accessed 15 december 2020).

United Nations (2015), *Transforming our world: the 2030 agenda for sustainable development* A/RES/70/1. Available at: https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf (Accessed 15 december 2020).

Sitography

Commission presents European Skills Agenda for sustainable competitiveness, social fairness and resilience: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1196 (Accessed 15 december 2020).

Consolidated version of the Treaty on the Functioning of the European Union - Part Three: Union Policies and internal actions - TIitle XII: Education, Vocational Training, Youth and Sport- - Article 165 (ex Article 149 TEC): https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A12008E165 (Accessed 15 december 2020).

Consolidated version of the Treaty on the Functioning of the European Union - Part Three: Union Policies and internal actions - TIitle XII: Education, Vocational Training, Youth and Sport - Article 166 (ex Article 150 TEC): https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A12008E166 (Accessed 15 december 2020).

European Education Area: https://ec.europa.eu/education/education-in-the-eu/european-education-area_en (Accessed 15 december 2020).

European policy cooperation (ET 2020 framework): https://ec.europa.eu/education/policies/european-policy-cooperation/et2020-framework_en (Accessed 15 december 2020).

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all: https://ec.europa.eu/sustainable-development/goal4_en (Accessed 15 december 2020).

Rome Communiqué, 2020: https://ehea2020rome.it/storage/uploads/5d29d1cd-4616-4dfe-a2af-29140a02ec09/BFUG_Final_Draft_Rome_Communique-link.pdf (Accessed 15 december 2020).

3. Methodological and tools

Bianca Delli Poggi

Maria Chiara De Angelis

Introduction

This chapter presents the methodology and tools for the research that each country partner has to carry out at local level, in the framework of ECOLHE - Empower competencies for Onlife Learning in HE.

In particular, a common template and tools for the research of each partner will be proposed.

This tool aims:

- To be a reference for all national research teams;
- To provide a common grid for collecting information;
- To introduce general guidelines useful to draft and to elaborate the national reports;
- To offer a proposal for the national researches index.

It will guide the first step of the research process in the Project ECOLHE and contribute to the delivery of the first outputs, with special reference to the development in partners' countries of national case studies, related to the topic: "Digital Technologies in HE: from the European vision to the university governance ".

National reports will be a very concrete tool for identifying, at national level, the way in which Universities have adapted the enhancing of ICT resources in HE, in order to face digital challenges and promote LLL, inclusion and innovation in their institutions.

In other words, a shared research protocol and reporting template for the national data collection and analysis will be produced by each county partner which should be followed and included in a final report, with the goal to assure the comparability of all the information gathered, on the basis of the same research criteria and tools; but without losing a flexible approach, based on the national context, suggested to achieve the overall research objectives, explained in the next paragraph.

The ECOLHE project is guided by one overall research question that asked: "How do Universities promote innovation and digital challenge in their processes and learning-teaching activities?"

The objective of the national researches on "Digital Technologies in HE: from the European vision to the university governance ", is to understand organizational processes in promoting digital innovation in universities and to examine:

- orientations, best practices, standards and constraints, with the intent to intercept useful suggestions for policymakers, decision-makers and Academic Bodies, in order to build an E-learning European HE Area, founded on teachers' professional development and European quality assurance standards.
- HE micro-policies related to the way in which they have' translated into practice' digital challenges through:
  a. the promotion of digital resources in teaching activities (online and/or blended);
  b. teachers' professional development on digital transformation;
  c. e-learning quality standards;
  d. online/blended university policies.

3.1. The methodological overview

The main objective of ECOLHE is to understand the way in which national policies have translated the European policies, and how the universities have translated regulatory constraints in practice with the intent to intercept useful suggestion for policy-makers, decision-makers and Academic Bodies, in order to built an European E-learning Higher Education Area, founded on teacher's professionalization and E-learning Quality Assurance Standard".

ECOLHE will examine national public policies for e-learning in HE with multiple case studies in order to understand the adaptation of key concepts from the transnational level to national level (as for i.e.: dominant rhetoric, orientations, legacies, obligations, risks and opportunities, expectations, educational paradigms and so on), during the implementation of inclusive and LLL processes, based on digital technologies.

The aim of the project is to examine, in the field of HE, the way in which each university (units of analysis) develops its strategic approaches to digitization. More in detail, the research activities within the project will examine the micro-policies of each unit of analysis and analyse how universities have "translated" the digital challenges into practice, following national frameworks.

Even if, there is growing attention to the transformations introduced by the digital transformation in HE (Castro Benavides et. al. 2020) "most of the European HE institutions have made little progress in adapting the courses offered to a student-centred learning model, able to integrate developments and opportunities in technologically advanced education" (The Future of HE, 2016).

The research will adopt a mix method in order to realize an exploratory and a comparative analysis based on a collection of case studies, aimed at understanding the similarities and differences between the cases (Zach, 2006) and exploring the object of the study with a replication strategy.

The research hypothesis is based on the idea that "the availability of the technological infrastructure is not per se enough to guarantee correct use of learning and knowledge technologies among colleagues, in the learners and researchers' group and with the learner group (Capogna, 2020). Based on this assumption, the research that will be carried out by the ECOLHE consortium has the objective to focus on the immaterial organizational aspects in the background of European universities' (ECOLHE IO1.1. 38). The interdisciplinary analysis, that will be realized, has its roots in the most recent theoretical contributions offered by organizational, sociological and pedagogical studies.

Based on these considerations, the research activities include two research focuses articulated as follows:

1) **At macro level (national),** for each case study, a literature analysis will be carried out aimed at briefly outlining the main cornerstones that define the national legislative/regulatory framework for HEs. The literature analysis will be complemented with 3 in-depth interviews addressed to significant institutional actors, able to illustrate the evolution in terms of digital transformation in recent years. The research with a qualitative analysis will take into account: national laws and strategies, national e-learning policies, digital strategies for Lifelong Learning, the promotion of ICT for social equity and inclusive learning, supporting services (educational and career guidance, career counselling, etc.), priorities for learning and appropriate incentives, national funding plan and strategies, plans for removing legal obstacles, measures adopted for ensuring LLL, initiatives and actions to promote the use of ICT in HE, policies and strategies related to teachers' professionalization, internationalization and quality assurance initiatives".

2) **At meso level (organizational level),** the research will apply a **mixed-method** for data collection, in which qualitative text-based and quantitative survey data will be collected leading to the elaboration of six case studies that will be analysed in a comparative perspective. The case studies will collect primary data using a proposed and shared methodology as well as common tools for the literature analysis, the in-depth interviews, the focus group and the (online) survey.

In ECOLHE project, the **case study method** will be applied altogether to six universities allowing to gather and describe their specific way of developing the digital challenges" at all levels.

The use of a multiple case study methodology is helpful for exploring and explaining better the phenomena, especially when the researchers have a minimum effect on the events (Yin, 2003). Moreover, for the purpose of

the Ecolhe project and its related research activities, the proposed methodology can be effective for illuminating different perspectives related to different pedagogical issues, which in turn can inform and support the level of practices (Divaharan & Lim, 2010). The salient features of a case study are (Serrano, 1994):

- peculiarities (techniques and tools to analyze unique situations),
- descriptiveness (clear and complete specific situation),
- heuristics (possibilities to find new issues or to confirm knowledge),
- inductivity (chance to develop hypotheses and to find relationships from one or more specific cases).

Case studies will be conducted in Italy, Spain, Greece, Ireland and Finland. As far as Italy is concerned, two universities will be involved: the Link Campus University and the University of Roma Tre.

The case studies will be analysed in a comparative perspective, with the intent to analyze specific experiences in national contexts identifying:

1) similarity, differences,

2) understand strengths, criticalities, opportunities, threats (SWOT analysis)

3) Identify elements of transferability, improvement and development.

ECOLHE project adopts **mixed-method research** in which the team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration (Johnson, Onwuegbuzie, Turner, 2007: 123).

The complexity of social phenomena, in fact, requires more points of view from which to draw data. Interviews and focus groups will be recorded, transcribed and subjected to thematic analysis to identify the significant elements of greatest interest with respect to the dimensions being analyzed. The analysis is based on the same interpretative grid developed and shared by the entire international research team involved in multiple cases. Even in qualitative research, we must follow the same research protocol in the collection and processing of data and in the subsequent analysis. This methodological guide must serve to standardize the collection and analysis process to create comparable and effective multiple cases.

Data collection will be focused on three areas - organizational, teaching-learning (educational) and cultural area, based on the proposal of a Digital Maturity Framework for Higher Education Institution (Annexe 3) which synthesizes the main existent frameworks/models related to the integration of digital technologies in HE (Đurek, Begičević Ređep, Kadoić, 2019).

There is not a single act, a single research decision, that is not an inextricable mix of quality and quantity" (Campelli, 1996: 30).

IN-DEPTH INTERVIEWS: In-depth interviews will be conducted involving academic bodies.

Deepening in interviews with key actors (policymakers and academic bodies), indicating also the theoretical principle to the observer to realize interviews. *At least 33 among policymakers and academic bodies* will be interviewed (in total) with the objective to evaluate the steps through which the individual national contexts and the case studies examined have tried to translate the transformations introduced by digital innovation into local practices and the recommendations vigorously pursued since 1999 by the European Union in the construction of an EEHEA. The interviews will be addressed to:

- **15 key actors from National Institutions:** 3 key actors for each country (IT, FIN, IE, ES, GR), chosen across key actors from decision-makers, public official, Quality Agency experts, institutional and/or professional institution, Bologna Process experts, EHEA experts, to define the context and gather information on national contexts;
- **18 key actors from Academic Bodies:** 3 key actors for each case study (2IT, FIN, IE, ES, GR) among Rector, Vice-Rector, Delegate for quality in teaching, Delegate for digital innovation, Responsible for quality policies and strategic plan.

In the template, theoretical principles to realize the interviews are also indicated (See Annex 1)

Focus groups and in-depth interviews methodologies will be used to collect data from academic bodies and key actors.

FOCUS GROUP: Among 150/160 among professors/researchers, PhD and department staff and coordinator will be involved in focus groups with the aim of detecting best practice, accompanying needs and coordination for the integration of digital technologies in academic teaching practices (60 in IT, 30 in ES, 30 in GR, 30 in FIN and 30 in IR).

There are conducted three focus groups sessions per university; each focus group session can involve around 8/10 persons for each target group: 1) teachers and researchers; 2) tutors and other professional figures in support of teaching; 3) administrative staff.

In the template, theoretical principles to realize Focus Groups are also indicated (See Annexe 2).

A quantitative methodology will be used to collect data from students.

SURVEY ONLINE: quantitative data from students' experiences related to the HE digital changes will collect through a survey online (a minimum of 100 students for each university).

In the template, the items of the survey online are also proposed for the discussion to be defined (Annexe 4).

Tab. 4: Target involved in the field research

Research tools	Target	Number	Scheduling[50]
In-depth interviews	Policy makers, actors of national institutions	**3 key actors** for each country (IT, FIN, IE, ES, GR)	M7-M9
	Academic bodies	**3 key actors** for each case study (2IT, FIN, IE, ES, GR)	M7-M9
Focus groups	Teachers/Researchers	**8/10 persons** for each target group	M7-M9
	Professional figures in support of teaching (tutors, PhD, Post-doc, etc.)		
	Administrative Staff		
Survey online	Students	A minimum of **100 students** for each case studies	M8-M9

3.2. A proposal for index

To reach the objective, **each case study report must present the following structure**:

- an introduction,
- a reconstruction of the national political framework related to the digital innovation in HE,
- a focus on *universities micro-policies* by documentary analysis,
- a qualitative analysis of the focus group and interviews results.

This qualitative research will focus on three areas - organizational, teaching-learning (educational) and cultural area - that consider the following seven sub-dimension of analysis, based on the proposal of a Digital Maturity Framework for Higher Education Institution51 which synthesizes the main existent frameworks/models related to the integration of digital technologies in HE (Đurek, Begičević Ređep, Kadoić, 2019)

1. **Leadership, planning and management**
    a. Financial investment in the use of ICT in learning and teaching; research and development; business of the institution

[50] We should adapt programming to contexts. The holiday periods are very different. Small changes may be considered as long as the quality and deadlines of the overall work are not compromised.

[51] Area/Dimension of analysis rom the digital maturity framework: 1. Leadership, planning and management; 2. Quality assurance; 3. Scientific-research work; 4. Technology transfer and service to society; 5. Learning and teaching; 6. ICT culture; 7. ICT resources and infrastructure http://archive.ceciis.foi.hr/app/public/conferences/2017/02/CECIIS-2017_paper_58_final.pdf (See Annexes 1).

b. Strategic planning of ICT integration in HEI
c. Managing the integration of ICT in learning and teaching at HEI
d. Managing the integration of ICT in scientific research at HEI
e. Information System for Supporting Business Processes of HEI
f. Planning and implementation of training of HEI employees in the field of digital competencies and ICT application
g. The relationship between the HEI and the state from the aspect of ICT integration
h. HEI policy in ICT integration and monitoring global trends

2. Quality assurance

a. ICT quality assurance policies;
b. monitoring and periodic review of study programmes, from the aspect of ICT application;
c. evaluation of the work of teaching, research, administrative and technical staff;
d. continuous monitoring of the results of scientific-teaching work and progress;
e. procedures for determining the needs, development or acquisition of ICT resources and their application;
f. approved procedures and follow-up on student enrolment, their progress through study and the completion of studies supported by ICT.

3. Scientific-research work

a. The use of ICT in the preparation and publication of scientific papers;
b. ICT support in the preparation and management of scientific research work and projects;
c. ICT research (collaborative ICT research on HEIs);
d. a system of support for researchers at the beginning of their careers in applying ICT in scientific research;
e. continuous training of researchers in ICT application in scientific research;
f. networking and collaboration of researchers with ICT support.

4. Technology transfer and service to society

a. collaboration with stakeholders (employers, local community, pre-tertiary education) supported by ICT;
b. applied research and professional projects supported by ICT and/or ICT;
c. networking of researchers and users of research (stakeholders) supported by ICT.

5. **Learning and teaching**
    a. preparation, storage and use of digital content in learning and teaching;
    b. innovative learning and teaching methods with ICT;
    c. the development of teachers' digital competence;
    d. the development of students' digital competence;
    e. the use of learning analytics to improve learning and teaching;
    f. ubiquitous learning and open curricula;
    g. personalisation and support for under-represented groups by using ICT in learning and teaching
6. **ICT culture**
    a. the network presence of HEIs;
    b. using ICT in HEIs promotion;
    c. the development of digital literacy and the promotion of innovativeness in ICT application with HEI employees;
    d. self-confidence and motivation of employees on the importance of ICT application;
    e. providing access to and support in the application of ICT infrastructure;
    f. the application of ethical standards, copyrights and intellectual property in the ICT field.
7. **ICT resources and infrastructure**
    a. the availability of ICT resources (hardware and software) for learning and teaching;
    b. the availability of ICT resources for scientific research;
    c. network infrastructures at HEIs;
    d. access to ICT resources for students (both in and out of the classroom);
    e. digital environment and information systems for employees and students;
    f. technical support and maintenance of ICT resources at HEIs;
    g. information security system.

The following table summarizes the elements of continuity that can be traced between the changes initiated by the Bologna process in 1999 and the Digital Maturity (Đurek et. a., 2019)).

Tab. 5: Bologna process key issues and Digital Maturity Framework in HEIs

Bologna Process Key issues	Digital Maturity Framework for Higher Education Institution
• **Harmonization of the university cycle system** - two main ones (first and second level) and one corresponding to the doctorate - to facilitate the integration of students into the European market.	1a; 1b; 1h; 2a; 2b.
• Uniformity of the qualification system to facilitate the **recognition of national academic qualifications and careers** with the aim of allowing more free access to the labor market.	1c; 2a; 2b; 3d.
• Insertion of a **credit system based on the ECTS** (European Credit Transfer and Accumulation System) as an estimate of the workload required by students to achieve the objectives.	1c; 2b; 2e; 2f.
• **Promotion of the mobility of students and teachers** in the European area of higher education through the development of programs and initiatives regulated at European and national level (joint degrees and courses of study, joint certificates and final diplomas, implementation of the Diploma supplement).	1a; 1b; 1c; 1d; 3 (a-f); 4 (a-c)
• **Quality assurance** through the establishment of an agency at national level (in Italy the ANVUR) that evaluates the quality of education and, consequently, the assurance at European level of the common standards implemented in cooperation between the countries adhering to the declaration.	2 (a-f); 5 (a-g).
• Employability to be pursued through an education that aims with the first cycle **to provide the skills necessary to carry out a profession.**	3d; 3e; 5d; 5f
• **Learning focused on the active role of the student** by promoting teaching based on understanding, autonomy, the relationship between teacher and student (student oriented).	5 (a-g)

• **Lifelong learning** (Masters, specialized training, continuous training, training agreements with organizations and / or companies, student worker management (part-time, differentiated paths, use of ICT, blended, e-learning).	1h; 3f: 4 (a-c); 5f; 5g;

The exploration of these seven areas will allow us to identify for each case study the main interesting experiences in the field of:

1. Enhancing digital technologies in Higher Education institutions;
2. Academics professional development paths with a focus on digital innovation;
3. Quality assurance in Higher Education with particular attention to digital innovation quality standards in teaching-learning processes;
4. Recognition and validation of teaching competencies with particular attention to digital skills in Higher Education.

- a quantitative analysis of questionnaires' results aimed at students;
- a conclusion oriented to outlines the most important efforts and critical issues in organizational and educational processes aimed to enhance digital resources and the environment in Universities (strengths, weaknesses, threats and opportunities, needs and perspective of improvement)

Based on these assumptions, template expects the national researches articulation in four main sections:

a. Introduction
b. I part: the national framework
c. II part: the results of the field research
    1. in-depth interviews
    2. focus groups
    3. survey online
d. Results / Conclusions (strengths, weaknesses, risks, threats and opportunities)

3.2.1. The main sections of the national reports

The main sections of the national reports are described *in more detail below.*

Introduction

The introduction of national research presents the main characteristics of the national report (objectives, methodology, division into chapters and paragraphs).

I PART. Literature analysis: the description of the national framework

This first part of the national research can be organized in three main parts:

The first one concerns the description of:

- **The national legislative framework** for the implementation of the agreements made during the Bologna process for the promotion of Digital Technologies in Higher Education. Each country partner involved in the case study will have to realize the content analysis of legislation in order to understand *the way in which national policies have transposed the European orientation in order to digital innovation policie*s in HE (specific laws, decrees, acts).
- **Professional development** with a specific focus on the empowerment of digital methodological competencies in higher education.
- **National systems of assessment and Quality Assurance in HE** with a focus on digital innovation
- **National financing programs** of specific projects to implement innovative didactic methods with the support of digital technology in Higher Education;

The second one concerns a desk analysis to describe:

- *focusing universities micro-policies* by documentary analysis based on principal public document adopted by universities case study (site; statute, qualitative politics for teaching, strategic plan, didactic plans, regulations, university policies, QA guideline etc.) to understand the way in which Academic Bodies have interpreted, adopted and translated in internal rules and practices the above questions.

The third one concerns a desk analysis to describe best practices of its own university refers to:

- the main and most interesting experiences in the field of training professors' and researchers' digital skills;
- the main and most interesting pedagogical adopted models in teachers' digital skills.

II PART. Field research: the national case study

The second part can present:

The 1st step of the national case study will be conducted by

- the main issues emerging from the deepening interviews which involve

a. **decision-makers**, national quality assurance agency in the area of HE and research, Bologna Process experts, EHEA experts; *The digital challenges for the university* (state of the art of the adoption of European recommendations and current national policies at the local level)

b. **academic bodies** (rector, faculty president, etc.) *Digital innovation of the university at:*

- Organizational level (Leadership, planning and management, Quality Assurance, ICT resources and infrastructure)
  a. Teaching-learning level (Learning and teaching, Scientific-research work, Technology transfer and service to society)
  b. Cultural level (ex. ICT culture, hidden curriculum of teachers and academic staff)
    - Strength and weakness, opportunity and threat in implementation of the digitization process in HE
    - best practice (academic specificity that is considered useful to enhance)
- the main issues emerging from the **focus groups**, which involve professors, researchers, Phd, department staff:
  - teaching practices and digital innovation
  - professional development with a focus on digital skills
  - best practices related to their own university
  - strength and weakness, opportunity and threat in implementation of the digital innovation in Higher Education
- the main issues emerging from the **survey online**, which involve students:
  A. digital technologies in the teaching-learning process (with a focus on strength and weakness of what they experienced)
  B. Needs analysis (at organizational, didactical and cultural level)
  C. best practices related to their own university

The main objectives of the case studies are to illustrate:

- needs and perspective of improvement of the use of digital technologies in HE
- emerging teaching and staff skills for the digital era;
- the most important problems detected and possible solutions.

Conclusions / Results

This part presents the main and the most relevant results of the national research; the emerging key elements of the case study context.

3.3. Focus group: methodological overview

3.3.1. Introduction to the focus group method

Focus groups are a data collection method. Basically, it is "Detection technique for social research, based on discussion between a small group of people, in the presence of one or more moderators, focused on a topic that you want to investigate in-depth" (Corrao, 2000).

Data is collected through a semi-structured group interview process. The focus groups will be conducted using the *Questioning route method,* a method that is often used in academic research. The structuring of the focus groups will be as high as the control of the discussion or the previously structured protocol allows to bring out the discussion on the topic always in the presence of the moderator. In this regard, the exchange of views of the various participants can promote a greater wealth of ideas and information on the topic.

There will be a structured path in which the moderator will develop specific questions to which participants respond verbally. The focus group structuring will be high as the control of the discussion, through a structured path in which the moderator will develop articulated and detailed questions. The type of questions will be divided according to the degree of exploration to be achieved by alternating open questions to which participants respond verbally, using a list of written responses, rating scales.

3.3.2. Characteristics of focus groups

The design of focus group research will vary based on the research question being studied. Some general principles who have to be considered are:

- Standardization of questions. Focus groups can vary in the extent to which they follow a structured protocol or permit discussion to emerge.
- The number of focus groups conducted, or sampling will depend on the 'segmentation' or different stratifications (e.g. age, sex, socioeconomic status, health status) that the researcher identifies as important to the research topic.
- The number of participants per group. The rule of thumb has been 6-10 homogeneous strangers, but there may be reasons to have smaller or larger groups.
- Level of moderator involvement. Can vary from high to low degree of control exercised during focus groups (e.g. the extent to which structured questions are asked and group dynamics are actively managed).

This method can be used for:

- To explore new areas of research;

- Explore a topic that is difficult to observe (not easy to access);
- Exploring a topic that does not lend itself to observation techniques (e.g. attitudes and decisions);
- To explore sensitive topics;
- When you want to collect a concentrated series of observations in a short period of time;
- Checking people's perspectives and experiences on a topic.

Also if they are used in combination with other methods, focus groups could be used for:

- collect preliminary data;
- help in developing surveys and interview guides (for this reason it is recommended to organize focus groups first and then interviews);
- clarify the results of research on another method.

3.3.3. Focus groups scheduling

Focus group planning should start a few weeks before the actual session (6-8 weeks). Time is crucial to identify the participants, develop and test the questions, locate a site, invite and follow up with participants, and gather the materials for the sessions.

3.3.4. Recording focus group data

One of the challenges in recording focus group data is knowing who is speaking at any particular time since often multiple people speak in the overlap.

- Consider audio or video recording focus group sessions (or even both). Permission for recording should be confirmed. The video will be helpful for identifying who is speaking. Recordings also provide access to nuances of the discussion and the ability to replay sessions during analysis.
- Have, if possible, 2 researchers (in addition to the moderator) attend the focus group and take notes. The focus of each researcher's note-taking efforts might be different (e.g. nonverbal behaviour, group dynamics, if relevant, emergent themes).

3.3.5. Benefits

Ability to produce a large amount of data on a topic in a short time

Access to topics that might be otherwise unobservable

Can ensure that data directly targets the researcher's topic

Provide access to comparisons that focus group participants make between their experiences. This can be very valuable and provide access to consensus/diversity of experiences on a topic

3.3.6. Identify the participants

- Determine how many participants involved in each session of the focus group

  In the case of ECOLHE focus groups are to be considered: three (3) focus groups sessions to manage for each case study, to explore innovation in teaching 24/30 experts for each partner country. The total number of participants in each focus group session is 8/10 people.

Each focus group session can involve around 8/10 persons for each target group:

1) teachers and researchers;

2) tutors and other professional figures in support of teaching;

3) administrative staff.

- Develop a list of key attributes to seek in participants based on the purpose of the focus group
- Professors, researchers, PhD students, department coordinators and staff involved in the integration of digital technologies in regular teaching activities, with a broad knowledge in the fields of ICT and didactics, proven experience and expertise at a high operational level, experience in the development of innovative plans, knowledge in the fields of learning management and classroom activities
- Using the list of attributes, select the participants
- Secure names and contact information, finalize the list and send invitations

Given the current situation, characterized by the Covid-19 pandemic, it is necessary to take into consideration the possibility to perform focus groups through an online synchronous interview (e.g. Zoom, Teams, etc).

3.4. In-depth interviews with key actors: methodological overview

3.4.1. Introduction to the semi-structured interview method

Through the semi-structured interviews, the identified focuses are:

- the interviewee's view (on the nature, causes, solutions of the analyzed phenomenon)
- the interviewee's tangible experiences on the phenomenon.
- the strengths, weaknesses, risks or opportunities for Academic Institutions in the promotion of ICT in HE (needs and prospects for improvement)

3.4.2. Purpose of the tool

Generally, the purposes of the semi-structured interview are:

- Obtain specific quantitative and qualitative information from selected respondents;
- Obtain general information relevant to specific issues (ie: to probe for what is not known);
- Gain a range of insights on specific issues.

3.4.3. What is the specific purpose of the interviews?

The purpose of this tool is to design a framework of targeted interviews with the key actors identified by the project.

In ECOLHE the actors are chosen among decision-makers, quality assurance experts in the area of HE and research, Bologna Process experts, EHEA experts, academic bodies, in order to define the context and collect useful information on national contexts (experiences in the field of digital innovation valorisation in HE, professional development of academics, recognition and validation of digital skills, quality assurance in HE, e-learning quality standards, strengths, weaknesses, risks or opportunities for academic bodies in the promotion of ICT in HE).

Interviews aim to understand, analyze and evaluate the following topics:

- national education policies in terms of digital challenges in Higher Education System;
- the steps were taken by relatively governance integration of digital technologies in Higher Education system and teaching practices;
- managing digital challenges in the Higher Education system with a special focus on European recommendations related to the development of skills in the digital era.

3.4.4. Characteristics of semi-structured interviews are:

- The interviewer and respondents engage in a formal interview.
- The interviewer develops and uses an interview guide: a list of questions and topics that need to be covered during the conversation, usually in a particular order.
- The interviewer follows the guide but is able to follow the current trajectories of the conversation that may deviate from the guide when he or she deems it appropriate without the risk of going off-topic. In this way, it can also happen that he or she is in what Merton called serendipity (Merton, 1936).

The semi-structured interviews are conducted with a fairly open framework that allows for targeted, conversational and two-way communication.

They can be used for both giving and receiving information. Unlike the structure of the questionnaire, where detailed questions are formulated in advance, semi-structured interviews begin with more general questions or topics.

Most questions are created during the interview, allowing both the interviewer and the interviewee the flexibility to explore details or discuss issues.

The semi-structured interview is only guided in the sense that some form of the interview guide, such as a matrix, is prepared in advance and provides a framework for the interview.

The script should not be too long: most in-depth interviews should not exceed 90 minutes, especially if the interviewees do not receive any compensation. Many senior managers will not spend more than half an hour, which means that interviews should be targeted and efficient.

Respondents must be prepared for in-depth interviews. Confirm the interview (time and place) in writing, and provide a general outline of the issues to be reviewed in advance. It is also important to indicate the time needed for the interview.

3.4.5. Conducting the interview

After introductory pleasantries, confirm the main purposes of the research project, the role that the interview plays, the approximate time required to complete the interview.

The respondent must do 90% of the talking. Return to incomplete points. If the respondent does not provide full information the first time a question is posed, return to incomplete points by repeating key questions throughout oblique references.

Questions must follow a general or a specific order. It is important to improve neutrality by avoiding agreeing or disagreeing with the respondent, avoiding indicating that a respondent's answer is 'good', 'right', 'interesting', 'wrong' or 'poor'.

3.4.6. Recording semi-structured interviews

Generally, the interviewer has a paper/web interview guide that follows. Since semi-structured interviews often contain open-ended questions and discussions may differ from the interview guide, it is generally best to record the interviews and transcribe them later for analysis.

Always ask permission to record an interview and, if the interview is conducted in person, keep the recorder in plain sight. It is also important to have a written release.

Although you can try to make notes to capture the respondents' answers, it is difficult to concentrate on conducting an interview and making notes. This approach will lead to poor quality annotations and will compromise the development of the relationship between interviewer and interviewee. The development of the relationship and dialogue is essential in unstructured interviews.

3.4.7. Benefits

Many researchers like to use semi-structured interviews because questions can be prepared ahead of time.

They can provide reliable, comparable qualitative data; they can confirm what is already known but also provide the opportunity for learning. Often the information obtained from semi-structured interviews will provide not just answers, but the reasons for the answers.

Semi-structured interviews also allow informants the freedom to express their views in their own terms. They are less intrusive to those being interviewed as the semi-structured interview encourages two-way communication. Those being interviewed can ask questions to the interviewer. In this way, semi-structured interviews can also function as an extension tool. When individuals are interviewed they may more easily discuss sensitive issues.

3.5. Survey online: methodological overview

The methodology of the survey online is being processed.

References

Campelli, E. (1996). Metodi qualitativi e teoria sociale, in Cipolla, C., De Lillo, A. (a cura di). *Il sociologo e le sirene. La sfida dei metodi qualitativi*. Milano: FrancoAngeli.

Cardano, M. (2003). *Tecniche di ricerca qualitativa. Percorsi di ricerca nelle scienze sociali*. Roma: Carocci (ristampa 2007).

Cardano, M. (2011). *La ricerca qualitativa*. Bologna: Il Mulino.

Castro Benavides et. al. (2020). *Digital Transformation in Higher Education Institutions: A Systematic Literature Review*

Colella, F. (2011), *Focus group. Ricerca sociale e strategie applicative*. Milano: FrancoAngeli.

Corrao, S. (2000). *Focus Group*. FrancoAngeli: Milano.

Corrao S. (2005). L'intervista nella ricerca sociale. *Quaderni di Sociologia*, n. 38: pp. 147-171, Torino: Rosenberg & Sellier.

Divaharan, S., & Lim, C. P. (2010). Secondary school socio-cultural context influencing ICT integration: A case study approach. *Australasian Journal of Educational Technology*, 26(6), 741-763

Đurek, V., Begičević Ređep, N. and Kadoić, N. (2019). Methodology for Developing Digital Maturity Model of Higher Education Institutions. *Journal of Computers* 14(4):247-256

Gianturco, G. (2004). *L'intervista qualitativa*. Milano: Guerini e Associati.

Johnson R.B., Onwuegbuzie A.J. e Turner L.A. (2007). Toward a Definition of Mixed Methods Research. *Journal of Mixed Methods Research*, 1, 112. New York: SAGE Publications.

Merton, R.K. (1936). The Unanticipated Consequences of Purposive Social Action. *American Sociological Review,* I, 1936, pp. 894-904.

Pérez Serrano, M.G. (1994). *Investigación cualitativa II: retos e interrogantes: técnicas y análisis de datos*.

Stake, R.E. (1975). *The Art of Case Study Research*. New York: Sage.

Yin R. (2003). *Case Study Research: Design and Methods*. New York: SAGE Publications.

Zack L. (2006). *Using a Multiple–Case Studies Design to Investigate the Information-Seeking Behavior of Arts Administrators.* Johns Hopkins University Press, Volume 55, Number 1, Summer 2006 pp. 4-21.

Annexe 1 - In-depth interview script

ECOLHE

Empower competencies for OnLife Learning in HE

National research and tool

IN-DEPTH INTERVIEW SCRIPT

Partner	
Interviewer	
Hosting Institution	
City	
Date	
Start time	
Stop time	

Respondent	
Profile	

Signature	

In-depth interview with policy makers/institution representatives

Warm-up questions	Online University*
0.1 What is the vision of digital innovation in HE in our county at national level? 0.2 How does this vision of digital innovation translate into practice to support universities in responding to the challenge of the digital society? (decrees, laws, and funding programs). 0.3 In national digital policies, how digital transformation should modify teaching-learning and university practices/activities? (focus mainly on organizational processes and goals)	**OK**
Central question	
1.1 Whether and how have European standards for quality assurance in Higher Education - with specific attention to digital innovation - been integrated into our national system? 1.2 What policy actions/government acts currently promote the integration of digital technologies and innovative methodologies in Higher Education? 1.3 What are the most important challenges our Higher Education System is facing with respect to digital innovation? before and after the pandemic (organizational issues, training offer, connection with the world of work, LLL, quality assurance process, methodologies, etc.) 1.4 In the national context, how are universities responding to the challenges of digital innovation and the demands of governance in this regard?	**OK**

1.5 Are there national guidelines on continuing education for university staff at all levels (faculty, researchers, staff, students), with specific reference to the development of digital competencies? 1.6 What are the strategies through which the central system supports universities to adopt these guidelines? 1.7 What/how much investment has been made in the past (since you have the responsibility and in the last 10 year) on digital innovation in Higher Education? With what objectives? 1.8 What is the outlook with respect to the recovery fund? 1.9 What actions do you think investment is needed to support the development of the digital maturity of universities?	
Closing section	
C.1 What are the strengths and weaknesses of current digital policies put in place in integrating digital technologies into universities to improve its role as an innovation and social promotion actor in the face of the challenges of the digital society? C.2 Last question: Is there anything further that you think is important?	**OK**

* Suitable questions also for Online University.

In-depth- interview with academic bodies (Rector, Faculty President)

Warm-up question- Area 1 ICT Culture	**Online University***
1.1 What is the vision of innovation and digital innovation in Higher Education in your institution? 1.2 In this institution how digital innovation have modified: ➔ institutional goals; ➔ internal and external organizational processes; ➔ teaching/ learning and university practices/activities; ➔ competencies and need required to teachers, researchers and students; ➔ the skills required of governance bodies and intermediate and support staff	

Area 2 - Leadership, planning and management	

2.1 How is the integration of new digital innovation into learning and teaching managed within the university?	---
2.2 How has the university moved organizationally due to digital innovation?	---
2.3 What guidance is provided to faculty, staff and students?	OK
2.4 What are the policies, guidelines and concrete help that central steering bodies offer to universities to redefine their role in the face of the challenge of digital innovation? - **what visión** - **what goals** - **which resources** - **which supports in terms of accompaniment** - **what evaluations are carried out and with what means / results?** - …. and how in your university do you manage to translate national guidelines into practice?	---
2.5 What are the most important problems you encounter today as a university to cope with digital innovation, even those imposed by the global pandemic?	OK
2.6 And what are the solutions adopted in order to: teaching/learning; research; third mission; administrative/management activities etc? With what results?	OK
2.7 Is it felt/how is it perceived by stakeholders (students, business, society…) your ability to promote digital innovation and renew internal organizational and teaching processes through the enhancement of digital technologies / resources)?	
Area 3 - Quality assurance	

3.1 Has the quality control system provided any indications on the integration of digital innovation in teaching/learning processes?	----
3.2 What role does the quality control system play in the promotion of educational innovation processes?	OK
3.3 What tools does it suggest?	OK
3.4 Are periodic monitoring and revision of curricula carried out with regard to the application of digital skills (in order to ensure effective digital maturity of students)?	OK
Area 4 - Scientific-research work	
4.1 What is the university vision of digital innovation in the scientific-research context?	OK
4.2 Which are the concrete applications to support research and researchers?	OK
Area 5 - Technology transfer and service to society	
5.1 What is the role of the Third Mission in the diffusion of digital innovation inside and outside the University?	OK
5.2 Who is in your university and what is the role of stakeholders in this process?	OK
Area 6 - Learning and teaching	
6.1 Which innovative tools, methods and approaches are used to improve the curricula of your university?	OK
6.2 What kind of support does the university provide for the professional development of faculty, researchers, students and administrative staff with respect to integrating digital innovation into teaching and university management?	
Area 7 - ICT resources and infrastructure	

7.1 What is the current availability of technology infrastructure and devices in the university?	OK
7.2 Do you think there are currently methodological skills for using these resources? And updating/maintenance skills?	OK
7.3 What are the critical issues/constraints that still weigh on this aspect and possible solutions to overcome them?	OK
7.4 Has a development plan been designed to do this?	OK
Closing section	
C.1 What strengths and weaknesses, if any, are you finding in your university's innovation governance?	OK
C.2 Last question: Is there anything further that you think is important?	OK

Annexe 2 - Focus group script

ECOLHE

Empower competencies for OnLife Learning in HE

National Researches and Tools

FOCUS GROUP SCRIPT

Partner	
Interviewer(s)	
Facility	
Place	
Date	
Start time	
Stop time	

Participants	**Role and institution**	**Signatures**
…		

There are three parts to the focus group script:

- Opening section: introduction to the survey and the focus group
- Question section
- Closing section

Focus groups would be focused on the integration of digital technologies in the teaching-learning process and the professional development linked to this integration.

Common section for the three targets of the focus groups

Opening section: introduction to the survey and the focus group

Concise summary presentation of the research project and the goals of the focus group

Illustration of the research project (objectives, partners, etc.): "Empower competencies for OnLife Learning in HE"

Outputs:

- *IO1: Case Studies Report "Digital Technologies in HE: from the European vision to the university governance"* (a comparative analysis and a transnational report with the main findings pointing out similarities and disparities among the six case studies involved)
- IO2: Training pilot for online teaching in HE
- IO3: Engagement tools for HE online learning environment
- IO4. Symbiotic Learning Paradigm for the recognition and validation of HE professionals' competencies
- IO5: Recommendations and guidelines for Academic Bodies

Concept of digital competence

Digital competence is a set of knowledge, skills and attitudes (thus including abilities, strategies, values and awareness) that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently,

appropriately, critically, 4 creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socialising, consuming, and empowerment. (Ferrari 2012).

Presentation of the project members (name, institution of origin, role)

Introductory reflection	The focus group will be conducted involving you in a guided discussion on core themes of the research project, to reach a global vision of digital technologies integration in the HE system, and specifically in your university.

FOCUS GROUP 2.1 **PROFESSORS/TEACHERS/RESEARCHERS***	FOCUS GROUP 2.2 **TUTOR AND OTHER PROFESSIONAL FIGURES IN SUPPORT OF TEACHING**** (PHD, Post Doc, Lectures)	FOCUS GROUP 2.3 **ADMINISTRATIVE STAFF AND TECHNICIANS**
Warm-up question		
What is your idea of digital innovation in Higher Education? What is digital innovation in your **university context**?	What is your idea of digital innovation in Higher Education? What is digital innovation in your l**earning support/ research** work context ?	What is your idea of digital innovation in Higher Education? What is digital innovation in your **staff work (technicians, administrative-organizational-teaching secretariat, etc.**)?

In what way does the digital technologies, also regarding the challenge of the new technology frontiers (e.g. artificial intelligence, digital learning environment, augmented reality etc.), have modified: - teaching, research **and organizational processes in your HEI?** **- your way of working and interacting with each other?** (*focus mainly on digital competencies for teachers/researchers and student's needs in the digital era*)	In what way does the digital technologies, also regarding the challenge of the new technology frontiers (e.g. artificial intelligence, digital learning environment, augmented reality etc.) have modified: - **teaching-learning processes in your HEI**? **- your way of working and interacting with each other?** (*focus mainly on digital competencies and student's needs in the digital era*)	**If and how do digital technologies have modified your way of working and interacting with each other?**
Organizational Dimension		
Question 1		
How is the university **as a system**, transformed, under the pressure of digital innovation, in terms of organization, internal processes, work flows and communication, at different levels? What are the main criticalities that you have encountered with respect to this?	How is the university, **understood as a complex system**, transformed, under the pressure of digital innovation, in terms of organization, internal processes, work flows and communication, at different levels?	How is the university **as a system,** transformed, under the pressure of digital innovation, in terms of organization, internal processes, work flows and communication, at different levels? What are the main criticalities that you have encountered with respect to this?

	What are the main criticalities that you have encountered with respect to this?	
Question 2		
How has the figure of the **teacher/researcher** changed in the last period and how is digital innovation having an impact with respect to the redefinition of roles, skills, organizational dimensions **of teaching and research**?	How has the figure of **collaborating teacher/ tutor** changed in the last period and how is digital innovation having an impact with respect to the redefinition of roles, skills, organizational dimensions?	How has the **administrative staff** changed in the last period and how is digital innovation having an impact with respect to the redefinition of roles, skills, organizational dimensions?
Teaching practices and digital technologies		
Question 1		
What is your experience in using innovative teaching methodologies **with digital technologies**? Can you give some examples of innovative methodologies with digital technologies applied to your teaching? **Have digital resources and technologies changed/modified your way of working/teaching/designing learning paths and relationship with students and colleagues?**	What is your experience in using innovative teaching methodologies **with digital technologies**? Can you give some examples of innovative methodologies with digital technologies applied to your learning support experience? **Have digital resources and technologies changed/modified your way of working/teaching/ designing learning paths and relationships with students and colleagues?**	What is your experience in using **digital technologies in your work**? **Up until now, has technological technologies been a resource or a limit to your work?** Do you share common models/practices in your **team/office/department?** **Give some examples**

Do you share common models/practices in your **faculty**?	Do you share common models/practices in your **faculty**?	
Question 2		
What are the criticalities/constraints that still weigh in the adoption of digital innovation/technologies in your **teaching** practices?... and the possible solutions to overcome them? Can you give some examples?	What are the criticalities/constraints that still weigh on digital innovation in your **learning support** experience and the possible solutions to overcome them? Can you give some examples?	What are the criticalities/constraints that still weigh on digital innovation in your **staff** experience and the possible solutions to overcome them? Can you give some examples?
Question 3		
In your personal experience, what are the main difficulties or advantages that students encounter facing the use of digital technologies in their learning and / or research paths? ***(disinterest/ interest; difficulty/ ease; apathy/enthusiasm; etc).***	**In your personal experience, what are the main difficulties or advantages that students encounter facing the use of digital technologies in their learning and / or research paths?** ***(disinterest/ interest; difficulty/ ease; apathy/enthusiasm; etc).***	**What concrete initiatives and changes have been promoted in your HEI for the development of digital innovation in the management, teaching and administrative processes in the last few years?** **In your experience, what are the results/effects of these efforts?**
Professional development		
Question 1		

In your personal experience, which are the main competencies that **professors/researchers** should have in order to carry on **effective lectures** (referring also to digital, methodological and socio-relational skills)? Can you give some examples?	**Based on** your personal experience, which are the main competencies that c**ollaborating teachers/tutors** should have in order to carry on effective **learning supp**ort (referring also to digital, methodological and socio-relational skills)? Can you give some examples?	**In your opinion**, which are the main competencies that **administrative and technicians staff** should have in order to carry on effective support **to the management, teaching, research and third mission in HEI?** Can you give some examples?
Question 2		
Based on your personal experience, what does help and what does restrain the acquisition and the effective use of those competencies? Focus on organizational and educational aspects: bureaucracy, logistics, timing, training models and pedagogical teaching methods. Can you give some examples?	Based on your personal experience, what does help teaching professionals and what does restrain the acquisition and the effective use of those competencies? *Focus on organizational and educational aspects: bureaucracy, culture organization, logistics, timing, training models and pedagogical teaching methods.* Can you give some examples?	Based on your personal experience, what does help and what does restrain the acquisition and the effective use of those competencies? *Focus on the following aspects: bureaucracy, logistics, timing, **resources, investment**, etc.* Can you give some examples?
Question 3		
How do you keep yourself up-to-date in order to acquire the mentioned competencies? (self-training, peer tutoring, paid private training, training offered by the **university**, etc.)	How do you keep yourself up-to-date in order to acquire the mentioned competencies? (self-training, peer tutoring, paid private training, training offered by your HEI, etc.)	How do you keep yourself up-to-date in order to acquire the mentioned competencies? (self-training, peer tutoring, paid private training, training offered by your HEI, etc.)

Can you give some examples?	Can you give some examples?	Can you give some examples?
Best practices		
Question 1		
Based on what has just emerged and on your personal experience, which are the best practices in digital innovation in the teaching-learning processes you know in your HEI (specify eventually the name of the project, contact details, etc.)? What makes the best/effective practices?	Based on what has just emerged and on your personal experience, which are the best practices in digital innovation in the teaching-learning processes you know in your HEI (specify eventually the name of the project, contact details, etc.)? What makes the best/effective practices?	Based on what has just emerged and on your personal experience, which are the best practices in digital innovation in **management processes** in your HEI (specify the area / organizational sector of application, contact details, etc.)? What makes the best/effective practices?
Question 2		
What is the level of transfer of these good practices, what facilitates and what does restrain them?	What is the level of transfer of these good practices, what facilitates and what does restrain them?	What is the level of transfer of these good practices, what facilitates and what does restrain them?
SWOT		
Question 1		

Based on your personal experience, which are strengths and weaknesses, opportunities and threats in: - the implementation of digital innovation in your university? - integration of digital technologies in organization processes and teaching in your university?	Based on your personal experience, which are strengths and weaknesses, opportunities and threats in: - the implementation of digital innovation in your university? - integration of digital technologies in organization processes and teaching in your university?	Based on your personal experience, which are strengths and weaknesses, opportunities and threats in - the implementation of digital innovation in your university? -integration of digital technologies in organization processes and teaching in your university?
Question 2		
What are the areas for improvement that the experience of the pandemic has brought out with respect to the use of digital technologies/resources in teaching and learning processes? ... and which will need to be worked on in the coming months?	What are the areas for improvement that the experience of the pandemic has brought out with respect to the use of digital technologies/resources in teaching, learning and **support** processes? ... and which will need to be worked on in the coming months?	What are the areas for improvement that the experience of the pandemic has brought out with respect to the use of digital technologies/resources in: - **management activities;** - organizing teaching/learning processes - **third mission activities** - **organizing research** ... and which will need to be worked on in the coming months?
Question 3		

How has the HEI intervened to accompany this process of enhancement and the integration of digital technologies in: - organizational processes - teaching/learning processes - third mission activities - research And what are the results/effects of these interventions?	How has the HEI intervened to accompany this process of enhancement and the integration of digital technologies in: - organizational processes - teaching/learning processes - third mission activities - research And what are the results/effects of these interventions?	How has the HEI intervened to accompany this process of enhancement and the integration of digital technologies in: - organizational processes - teaching/learning processes - third mission activities - research And what are the results/effects of these interventions?
Question 4		
What are the limits/risks and opportunities that governance has faced in your HEI's digital innovation process? **How has governance intervened to overcome the negative aspects, limits and risks identified?**	**What are the limits/risks and opportunities that governance has faced in your HEI's digital innovation process?** **How has governance intervened to overcome the negative aspects, limits and risks identified?**	**What are the limits/risks and opportunities that governance has faced in your HEI's digital innovation process?** **How has governance intervened to overcome the negative aspects, limits and risks identified?**

* (UOC: PRA + Researchers)

** (UOC: PDCs + Tutors)

Annexe 3 - Digital Maturity Framework

1. Leadership, planning and management:
a. Financial investment in the use of ICT in learning and teaching; research and development; business of the institution. b. Strategic planning of ICT integration in HEI. c. Managing the integration of ICT in learning and teaching at HEI. d. Managing the integration of ICT in scientific research at HEI. e. Information System for Supporting Business Processes of HEI. f. Planning and implementation of training of HEI employees in the field of digital competencies and ICT application. g. The relationship between the HEI and the state from the aspect of ICT integration. h. HEI policy in ICT integration and monitoring global trends.
2. **Quality assurance:**
i. ICT quality assurance policies. j. Monitoring and periodic review of study programmes, from the aspect of ICT application. k. Evaluation of the work of teaching, research, administrative and technical staff. l. Continuous monitoring of the results of scientific-teaching work and progress. m. Procedures for determining the needs, development or acquisition of ICT resources and their application. n. Approved procedures and follow-up on student enrolment, their progress through study and the completion of studies supported by ICT.
3. **Scientific-research work:**
o. The use of ICT in the preparation and publication of scientific papers.

p. ICT support in the preparation and management of scientific research work and projects. q. ICT research (collaborative ICT research on HEIs). r. A system of support for researchers at the beginning of their careers in applying ICT in scientific research. s. Continuous training of researchers in ICT application in scientific research. t. Networking and collaboration of researchers with ICT support.
4. **Technology transfer and service to society:**
u. Collaboration with stakeholders (employers, local community, pre-tertiary education) supported by ICT. v. Applied research and professional projects supported by ICT and/or ICT. w. Networking of researchers and users of research (stakeholders) supported by ICT.
5. **Learning and teaching:**
x. Preparation, storage and use of digital content in learning and teaching. y. Innovative learning and teaching methods with ICT. z. The development of teachers' digital competence. aa. The development of students' digital competence. bb. The use of learning analytics to improve learning and teaching. cc. Ubiquitous learning and open curricula. dd. Personalisation and support for under-represented groups by using ICT in learning and teaching.
6. ICT culture:
ee. The network presence of HEIs. ff. Using ICT in HEIs promotion.

gg. The development of digital literacy and the promotion of innovativeness in ICT application with HEI employees. hh. Self-confidence and motivation of employees on the importance of ICT application. ii. Providing access to and support in the application of ICT infrastructure. jj. The application of ethical standards, copyrights and intellectual property in the ICT field.
7. ICT resources and infrastructure:
kk. The availability of ICT resources (hardware and software) for learning and teaching. ll. The availability of ICT resources for scientific research. mm. Network infrastructures at HEIs. nn. Access to ICT resources for students (both in and out of the classroom). oo. Digital environment and information systems for employees and students. pp. Technical support and maintenance of ICT resources at HEIs. qq. Information security system.

Annexe 4 - Students survey

Dear student,

The ECOLHE project, funded by the European Commission under the Erasmus+ Programme, has among its goals to analyze student's perception regarding the ability of their University to integrate digital technologies to support teaching/learning activities. To gather this knowledge, we kindly ask you to fill in a brief questionnaire, which will take approximately 10 minutes to complete. All data will be collected anonymously, in accordance with the EU General Data Protection Regulation (GDPR) No. 679/2016, and will be processed in aggregate form.

Many thanks for your collaboration!

Teaching /Learning process *In this part of the questionnaire we measure your perception about the innovation in teaching methodologies, learning approaches, tools and resources in learning activities and assessment methods*					
	Strongly disagree	**Disagree**	**Neutral or uncertain**	**Agree**	**Strongly Agree**
To foster students' learning, in the classes, the teachers					
Use game elements or educational games					
Use visual or digital resources and tools					
Use conceptual maps					
Use class group activities					
Use case studies					
Use lab experiments and simulations					
Stimulate debating and peer assessment					
Invite guest speakers					
Assess students' prior knowledge to orient personalised learning					

<u>To assess the knowledge:</u> Students take innovative tests (quiz, game, playing role, speech, etc.) during the classes	

Students' experience *In this part of the questionnaire, we explore your perceptions and satisfaction about academic living*					
	Strongly disagree	**Disagree**	**Neutral or uncertain**	**Agree**	**Strongly Agree**
<u>Based on my experience, I believe that:</u> Students are at their ease to each other Students are respectful towards each other Locations is functional to my needs of studying or staff contact The faculty organization/structure is clear to me Announcements from the administrative staff are clear The administrative staff is prompt to support students' needs Teaching staff is empathic Teaching staff provide the student support that I need Teachers are engaged in the teaching process Teachers are digitally competent Teaching materials are not too difficult to understand Teaching materials are appealing Lessons are available to students remotely on the internet					

Lessons catch my attention and stimulate my curiosity Technology and learning portals (e.g. Moodle, Learning Management System) are effectively used ICT Tools and platforms are intuitively used I'm overall satisfied with my choice to study at this University	

Students' learning outcome:

In this part of the questionnaire, we explore your academic performance, skills and competences acquired in a given time frame and we measure your engagement

	Strongly disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree
<u>I believe that studying at this University:</u> matches my learning expectations is really enjoyable is developing my soft-skills is giving me the opportunity to meet significant people for my life and my profession is giving me the oppotunity to find a job will impact on my good professional image/reputation will help me in acquiring job or career related knowledge and skills will help me develop my critical thinking					

Profiling

Demographical and other information about the respondent

I am	**Male**	**Female**	**Other**	**I do not want declare**
My age is	**17-19**	**20-22**	**23-25**	**26 or more**
My school degree score is	**(number)**	**over**	**(denote the max)**	
My degree program is	**Bachelor degree**	**Master' degree**		
My degree program is in the area of	All areas of mathematics, pure and applied, plus mathematical foundations of computer science, mathematical physics and statistics Particle, nuclear, plasma, atomic, molecular, gas, and optical physics Structure, electronic properties, fluids, nanosciences Analytical chemistry, chemical theory, physical chemistry/chemical physics Materials synthesis, structure-properties relations, functional and advanced materials, molecular architecture, organic chemistry Informatics and information systems, computer science, scientific computing, intelligent systems Electronic, communication, optical and systems engineering Product design, process design and control, construction methods, civil engineering, energy systems, material engineering Astro-physics/chemistry/biology; solar system; stellar, galactic and extragalactic astronomy, planetary systems, cosmology, space science, instrumentation Physical geography, geology, geophysics, meteorology, oceanography, climatology, ecology, global environmental change, biogeochemical cycles, natural resources management			

	Economics, finance and management Sociology, social anthropology, political science, law, communication, social studies of science and technology Environmental studies, demography, social geography, urban and regional studies Cognition, psychology, linguistics, philosophy and education Literature, visual and performing arts, music, cultural and comparative studies Archaeology, history and memory Molecular biology, biochemistry, biophysics, structural biology, biochemistry of signal transduction Genetics, population genetics, molecular genetics, genomics, transcriptomics, proteomics, metabolomics, bioinformatics, computational biology, biostatistics, biological modelling and simulation, systems biology, genetic epidemiology Cell biology, cell physiology, signal transduction, organogenesis, developmental genetics, pattern formation in plants and animals Organ physiology, pathophysiology, endocrinology, metabolism, ageing, regeneration, tumorigenesis, cardiovascular disease, metabolic syndrome Neurobiology, neuroanatomy, neurophysiology, neurochemistry, neuropharmacology, neuroimaging, systems neuroscience, neurological disorders, psychiatry Immunobiology, aetiology of immune disorders, microbiology, virology, parasitology, global and other infectious diseases, population dynamics of infectious diseases, veterinary medicine Aetiology, diagnosis and treatment of disease, public health, epidemiology, pharmacology, clinical medicine, regenerative medicine, medical ethics

	Evolution, ecology, animal behaviour, population biology, biodiversity, biogeography, marine biology, ecotoxicology, prokaryotic biology Agricultural, animal, fishery, forestry and food sciences; biotechnology, chemical biology, genetic engineering, synthetic biology, industrial biosciences; environmental biotechnology and remediation			
I am attending the	**First year**	**Second Year**	**Third year * (denote the max)**	**Other**
My average score at the exams is	**(number)**	**over**		
I'm in progress with the exams	**Y**	**N**		
I'm studying at	**name of University da un menù a tendina in base al quale risultato parte la sezione customizzata**			